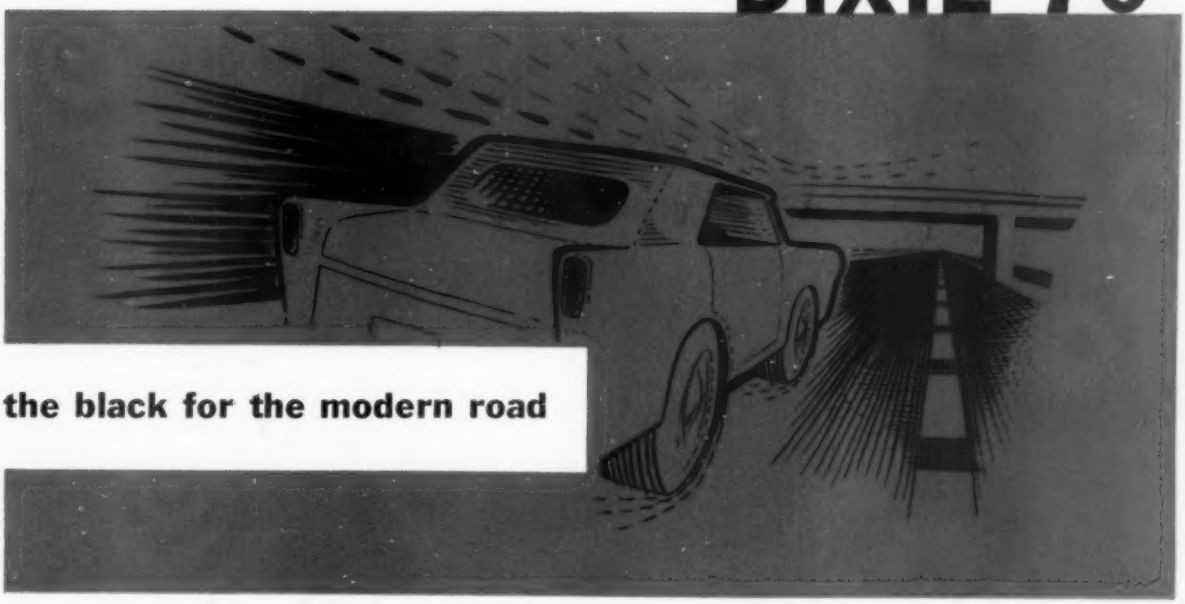
RUBBER and PLASTICS WEEKLY

VOLUME 140 NO. 13 APRIL 1 1961 ONE SHILLING

DIXIE 70



the black for the modern road

Dixie 70 (ISAF Black) is the latest addition to the range of Dixie Blacks now being manufactured in the U.K. Ideal for toughest treads, maximum mileage tyres and for gruelling high speed highway operations

ANCHOR CHEMICAL COMPANY LTD - MANCHESTER 11

London Office: Grand Buildings, Trafalgar Square, W.C.2
Scottish Agents: J. & G. Hardie & Co. Ltd., 178 Fulton Street, Glasgow, W.3.
American Liaison and Service Branch: British Anchor Chemical Corporation, 366 Madison Avenue, New York 17 N.Y.

TUFTED
CARPET
YARNS
AND
COTTON
AND
SYNTHETIC
FABRICS
FOR
THE
RUBBER
ELECTRICAL
AND
CHEMICAL
TRADES

JOHN BRIGHT & BROTHERS LTD.

SPINNERS DOUBLERS & MANUFACTURERS

ROCHDALE.

TELEPHONE: ROCHDALE 4141 (5 LINES)
TELEGRAMS: "BRIGHTS" ROCHDALE
ESTD. 1809.

new!

OZONO

all weather protection for rubber goods

A synergistic blend of anti-ozonants, anti-oxidants and anti-sunckeck agents. Soluble in Gasoline, Benzine, Carbon tetra-chloride and Methylene Chloride.

OZONO disperses well in rubber compounds when processed in Mills or Internal Mixers. Suitable for tyre carcasses, inner tubes, footwear, sponge, wire insulation, Automotive Rubber and tubing.
Write now for explanatory leaflet.

BRR

BRITISH RECOVERED RUBBER & CHEMICAL CO. LTD.

Ashton New Road, Clayton, Manchester, 11.
Telephone East 3241-5 Telex 66491
Telegrams ' Reclaimed Manchester '

Southern Office : Barclays Bank Chambers, 1,High St., St. Albans.
Telephone : St. Albans 50416-7. Telex : 24173.

Sole concessionaire for the **BEACON CHEMICAL INDUSTRIES INC.**

Moving from the soap and water variety to Latex foam—Micafine Mica Powders have even more attractive qualities. For instance when Mica powder is added as a filler it hardens the foam rubber, thus enabling more air to be incorporated—which in turn results in a big saving in costs. Compared with other fillers Micafine Mica powders are remarkably easy to disperse—they can even be added dry to the latex foam mix. In every case whether Micafine powders are added dry or in a slurry an excellent foam structure is produced which can be used for articles varying from thin carpet backings, to thick sections such as cushions and mattresses. The unique laminar structure of Micafine powders maintains the desirable features of the foam including good mechanical and dynamic properties, regular cell structure and smooth skin. Mica powders are particularly useful in foam rubber made from synthetic Latex or blends of synthetic and natural Latex, as their ability to increase the hardness of the foam counteracts the softness of the foams containing synthetic Latex. For detailed information on the use of Mica powder as a filler write TODAY for a copy of 'Mica powder in Latex Foam Rubber'.

Free samples of Micafine Mica powder for evaluation will also be provided.

micafine MICA POWDERS

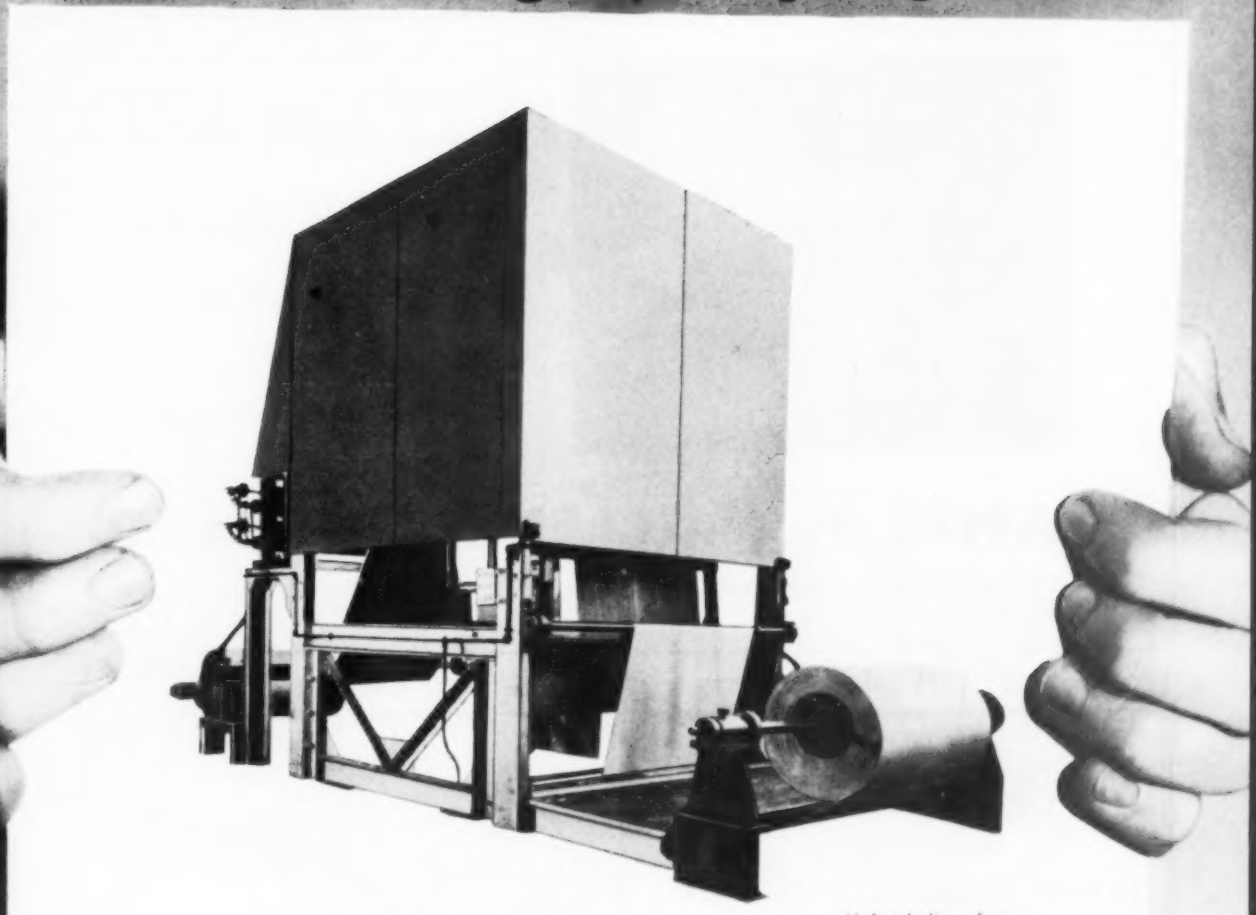
micafine limited

MICAFINE LTD · RAYNESWAY · DERBY Telephone: DERBY 55981 (3 lines)

P32

behind every **Francis Shaw** machine

research·design·quality engineering



Made under licence from Barrow, Hepburn & Gale Ltd

Constant research and development, close co-operation with users, advanced design, selected high quality materials . . .
These, coupled with long experience, help to create processing machinery of unrivalled performance.

The Francis Shaw vertical plastics spreader is designed compactly to overcome space limitations, for the uniform and continuous impregnation of medium to heavy fabrics. Design features permit

* **Precise and constant gauge control over width of fabric**
* **One side coatings, or double coatings in one operation**
* **Continuous operation by a simple jointing device**

Francis Shaw

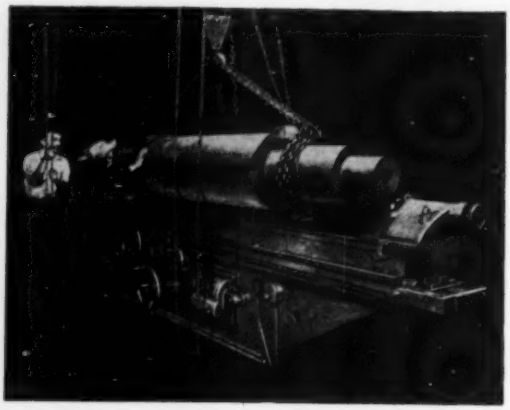
FRANCIS SHAW & COMPANY LIMITED · MANCHESTER 11 · ENGLAND

TELEGRAMS: "CALENDER" MANCHESTER · TELEPHONE: EAST 1313-8 · TELEX: 66-357

London Office: 22 Great Smith Street London SW1 · Telephone: Abbey 3245 · Telegrams: Vibrate London · Telex: 22250
Canada: Francis Shaw (Canada) Ltd Grahams Lane Burlington Ontario · Telephone: Nelson 4-2350 · Telegrams: Calender Burlington Ontario
Telex: Canada Calender Hamilton 021/662

OVERSEAS AGENTS THROUGHOUT THE WORLD

MILLS CONVERTED TO NEW SAFETY STANDARDS



INSTALLATION MAINTENANCE

REPAIRS NEW MACHINES

SPARE PARTS FOR ALL TYPES OF INDUSTRIAL PLANT

UNITS HANDLED UP TO FOUR TONS

•

ROLL GRINDING A SPECIALITY

JAMES H. PULLEN (1942) LTD.

ROTHERMERE ROAD WADDON SURREY *Telephone: Croydon 6067/8*

W. B. STOCKER & CO LTD

Market Buildings

29 MINCING LANE, LONDON, E.C.3

Tel: Mansion House 7016/8 Grams: Vademecum, London

PLANTATION RUBBER

RUBBER LATEX

GUTTA PERCHA

SOLE CREPE

BALATA

Exclusive Compounds

NATURAL or SYNTHETIC for particular purposes

e.g. Tank Lining
Precision Mouldings
Gaskets and Jointings
Butyl Neoprene and Hypalon applications

Enquire

HATCHAM RUBBER

COMPANY LIMITED

PRINCES WAY, WADDON, CROYDON, SURREY

CROydon 6054/56

NEW development in the range of BEKEN Mixers

EXTRA HEAVY DUTY

MIXER Type 15D

THE BEKEN MIX is the TRUE mix

The latest addition to the well known range of mixers is the Beken Duplex Extra Heavy Duty Mixer type 15D, which has been specially designed to mix and disperse the very tough and tenacious materials encountered in the Rubber, Plastics, Paint and allied industries.

Thorough dispersion, unvarying quality of output and constant mixing times are assured.

Send materials for trials which will be carried out in strict confidence, or initially write for further details of the outstanding advantages of these machines to

Sole distributors

LAVINO (LONDON) LIMITED

GARRARD HOUSE, 31-45 GRESHAM STREET, LONDON, E.C.2

Telephone: MONarch 6137

Sole Manufacturers

E. HUNT & CO. LIMITED

RIPPLE ROAD, BARKING, ESSEX

Telephone: Dominion 2227

L. STECHLER & CO LTD

MALVERN GARDENS, CANTERBURY ROAD,

KILBURN, LONDON, N.W.6

Phone **MAIDA VALE 0012/3/4**

Cables **ELSTECHLER, LONDON**

TELEX No. 21229

We specialise in . . .

MANUFACTURERS' SOLE CREPE CUTTINGS
Pale Brown, Coloured, Buffings, etc.

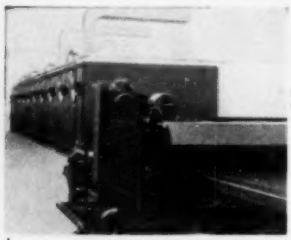
DAMAGED CRUDE RUBBER

CRUDE RUBBER OFF-GRADES

SALVAGE CRUDE RUBBER
All grades of Crude Rubber can be supplied cut into thin slices or slabs

BALE CUTTING FOR THE TRADE
We are able to undertake the bale cutting of your own rubber, either natural or synthetic

PROMPT DELIVERIES — *Your enquiries are welcomed. May we quote and send you samples?*



Complete factory installations and machinery for the manufacture of:

FOAM RUBBER

FOAM PLASTIC (POLYSTYRENE)

DIPPED ARTICLES (LATEX AND PLASTIC)

MANY MANUFACTURING PROCESSES IN OTHER FIELDS

Apart from this we can offer advice and technical assistance (know how)

EUR-O-MATIC LIMITED
European Company for Mechanisation
WEESP HOLLAND
P.O.B. 25. Grams: Euromatic Weesp Telex: 14182 Tel: 2843

MOULDS

TOOLS OF ALL TYPES FOR MOULDING PLASTICS—RUBBER EBONITE—FIBRE GLASS ETC.

INJECTION MOULDS FOR ARTICLES UP TO 60 OZS.

MOULDS DESIGNED AND SUPPLIED FOR McNEIL PRESSES

ALL TYPES OF FOOTWEAR MOULDS — MILD STEEL PLATES SUPPLIED EITHER BLACK OR GROUND UP TO 48"SQ.

VERSON ENGINEERING CO. LTD.
MIDDLETON JUNCTION, MANCHESTER
MIDDLETON 2328 & 3348

GEO. HANKIN & CO.
VICTORIA HOUSE, 118 FENCHURCH STREET, LONDON, E.C.3
Telephone: Mincing Lane 2737/9 *Telegrams: Outerly, Telex*

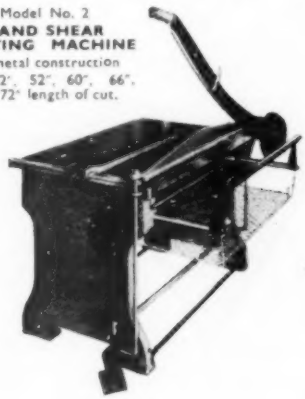
CRUDE RUBBER

LIQUID LATEX

SOLE CREPE

Model No. 1
HAND SHEAR CUTTING MACHINE
Sizes: 30", 43", 54" and 60" length of cut.

Model No. 2
HAND SHEAR CUTTING MACHINE
All metal construction
33", 42", 52", 60", 66", and 72" length of cut.



T. KENDELL & SONS LTD.

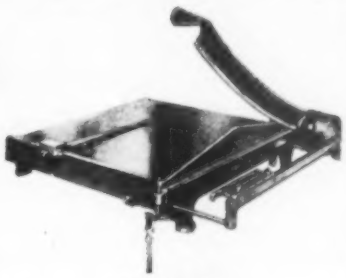
Established 1840

French Place, Shoreditch,
London, E.1

Telephone: SHOreditch 4782/3/4

CUTTING MACHINERY
AND EDGE TOOLS
for Rubber, Sponge and Foam Rubber, Plastics, etc.

CAN WE QUOTE YOU FOR STEEL OR RIBBON STEEL CUTTERS FOR SHAPES, ETC.?



Model No. 6
BENCH HAND SHEAR CUTTING MACHINE
Sizes 8", 12", 18" and 26" length of cut.

Model No. 125R
ROTARY CUTTING MACHINE
Strip Cutting sheets, Cross cutting for Squares, Oblongs, TILES, Adjustable for size. Power operation.
Sizes 25½", 32", 38", 52", 60" and 72" widths.

Very material to your needs

Formapex
Synthetic Resin Bonded
LAMINATES

Formapex is tough, stable, unaffected by heat or moisture. It has a high strength/weight ratio, and is resistant to dilute chemicals and organic solvents. It can be punched or machined and has good electrical insulating properties. Paper and fabric base grades are manufactured to meet all appropriate British Standards. For electrical and mechanical engineers Formapex can solve many problems. Please write for Technical Brochure 11L.

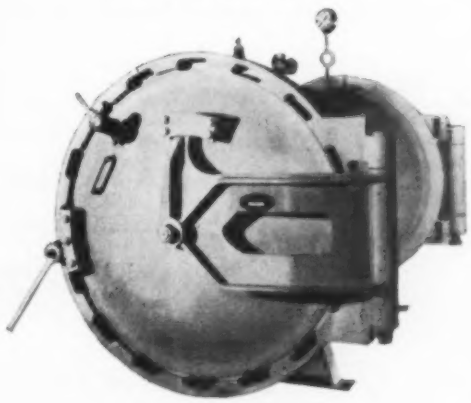
IOCO LIMITED
ANNIESLAND, GLASGOW, W.3
Telephone: Scotstoun 5501 6

Specialists in

VULCANISING PANS

AUTOCLAVES AND PRESSURE VESSELS

BOLTLESS DOORS MANUALLY OR POWER OPERATED



MANUFACTURED BY

R. LORD & SONS LTD.

Barnbrook Boiler Works, Bury, Lancashire

Telephone: Bury 4862 (2 lines)

Remember

the name

ROBAC

for Dry Rubber Accelerators

Technologists everywhere specify ROBAC Dry Rubber Accelerators for a reliable cure *with complete confidence*. The familiar trade mark 'ROBAC' is a well-known symbol of quality and dependability, backed by many years' experience and research in manufacturing problems. Technical brochures are available on request.

Specify ROBAC Rubber Accelerators for a reliable cure for Hot Water Bottles, Rubber Tiling, Flooring and Sheeting, Rubber Footwear, Playballs and Toilet requisites etc.

ROBAC

DRY RUBBER ACCELERATORS

ROBINSON BROTHERS LIMITED RYDERS GREEN, WEST BROMWICH *Tel: West Bromwich 2451/3*

M.W.63

Editorial Director: J. D. COPEMAN.

News Editor: PETER RANSLEY.

Technical Editor:
RICHARD NYE, M.A.

Advertisement Director:
EDWARD J. BYFIELD.

Advertisement Manager:
MICHAEL J. WHELAN.

UK Area Representatives

L. Quy, South and West of England and South Wales (Operating from London Office)

A. J. Legg, 55 Lee Lane West, Horsforth, Nr. Leeds. Tel. No. Horsforth 3845, North-East England, Lancashire, Yorkshire, Nottinghamshire, Lincolnshire and Derbyshire

W. Brown, 13 Allerton Road, Southport, Lancashire. Tel. No. Southport 5121, Scotland

E. A. Daniel, 'Brockenhurst', 211 Dower Road, Four Oaks, Sutton Coldfield, Warwickshire. Tel. No. Four Oaks 2098, Midlands (excluding Staffordshire North of the A.5), Cheshire and North Wales

E. Burgess, 40 Parkside Drive, Maybank, Newcastle-under-Lyme. Tel. No. 64678, Staffordshire North of the A.5

Overseas Representatives

Belgium—Albert Milhado & Co., G.m.b.H., Pompstraat 2, Antwerp

France—R. K. Larke, 7 Rue Pilaudo, Asnieres (Seine). Tel. No. Gresillons 42.24

Germany—Albert Milhado & Co., G.m.b.H., Charlottenstrasse 32, Dusseldorf. Tel. No. 27217

Italy—Massimo Fano, Via V. Minto 14, Milan. Tel. No. Milan 808135

Netherlands—G. Arnold Teesing, Rubensstraat 68, Amsterdam, Z. Tel. No. 727913

United States—Overseas Publishers' Representatives, 29 West 34th Street, New York 1, N.Y. Tel. No. Bryant 9-0794

RUBBER and PLASTICS WEEKLY

Formerly 'Rubber Journal and International Plastics'

Volume 140 *IN ITS 77th YEAR* **No. 13**

April 1 1961

Editorial

NOTES OF THE WEEK 493

Articles and News

NEWS BRIEFS 494
PLASTICS PLANT FOR RUMANIA 495
POST-MORTEM ON SPEKE 496
POLYMERS FOR METALS 498
FOAMING AT HIRWAUN 502
EUROPEAN TECHNOLOGY REVIEW 504
CORRESPONDENCE 511
APPLIED SCIENCE OF RUBBER 512
ANCHOR CHEMICAL MEETING 520

Features

VIEWS AND REVIEWS 506
MEN AND MATTERS 508
THE LEGAL ANGLE 510
PLASTICS STATISTICS 514
RUBBER STATISTICS 514
RUBBER AND PLASTICS STOCK MARKET 515
RUBBER MARKETS 517
INDUSTRY INTELLIGENCE 519
SYNTHETIC RUBBER PRICES 521
PLANTATION NEWSLETTER 522

Classified Advertisements . . . 523 Advertisers Index . . . 526

MACLAREN HOUSE, 131 GREAT SUFFOLK STREET, LONDON, S.E.1
Grams: 'Buns, Souphone, London' Phone: HOP 5712

Annual Subscription, including Postage: United Kingdom and Oversea, £2 15s.; Index (half-yearly), 10s. per annum extra. Published weekly. Registered at GPO as a Newspaper. Registered for Transmission by Canadian Magazine Post. Entered as Second Class matter at Post Office, Boston, Mass. USA, under the Act of March 3, 1879 (Sec. 397 P. L. and R.)

ALL SIZES CONSTANT OR VARIABLE PITCH
SCREWS, BARRELS and LINERS for PLASTIC EXTRUDERS

Also manufacturers of

SPIRAL MARKING MACHINES
FOR PLASTIC CABLE IDENTIFICATION

BUNCHING and TWINNING MACHINES UP TO 24" DIAMETER BOBBINS

PAPER LAPPING MACHINES, STRANDING MACHINES PAY OFF and TAKE UP STANDS, ETC.

JOHN DOCKER & CO. (ENGINEERS) LTD.
Cromwell Works, North Feltham Trading Estate, Feltham, Middlesex
Tel: Feltham 6341 Grams: Docrebuilt, Feltham Cables: Docrebuilt, London

THIS IS
INTOL
SYNTHETIC
RUBBER
IN FOOTWEAR

INTOL in shoes. In light shoes, heavy shoes, work shoes, play shoes. INTOL fashionable, INTOL plain, INTOL coloured. To manufacturers of footwear and to manufacturers in every industry INTOL SB Rubber has these advantages: stable price, consistent quality, assured, punctual delivery from stock. INTOL is the only SB Rubber manufactured in bulk in Britain, it is produced by I.S.R. for Britain's rubber users and backed by an active Technical Service. This Service is available to manufacturers in every industry; it tests and compiles its findings into useful production reports, provides valuable compounding and processing data, it treats each customer individually and confidentially, it comes to you and costs nothing. You can use INTOL: contact I.S.R. and find out how.

The International Synthetic Rubber Company Ltd.
Southampton · Tel: Blackfield 3141 · Cables: INTOL HYTHE
London · Tel: Langham 0711 · Cables: INTOLRUB LONDON
Manchester · Tel: Pyramid 1241 · Cables: INTOL MANCHESTER

NOTES of the WEEK

Natural Research

SINCE its introduction last year the superior processing rubber PA 80 has met with a good measure of acceptance. As with other superior processing rubbers, its main outlet is in the extrusion field — it has low die swell and permits a wider range of temperatures and scroll speeds — and it is finding applications in many fields, from gaskets and hose to surgicals and calendered sheet. This product of natural rubber research is certainly one of the best processing aids on the market, and illustrates the fact that these days natural comes out of both a tree and a test tube. It is a reminder that, although it may be without the concentrated resources of the giant industrial concerns who are investing in synthetic, the natural rubber industry is carrying out an enormous amount of research on its product. The Prime Minister of Malaya, who visited the Natural Rubber Producers' Research Association in Welwyn last week, must have been impressed with what he saw. In his own country the Rubber Research Institute is the largest single crop research organization in the East.

All this effort has one practical aim — to give the rubber manufacturer a better product. It may be soil research, or it may be control of parasites, but the end in view is to increase yields, produce rubbers with better and better properties; in fact, to approach to that ideal rubber which any manufacturer always has tucked away somewhere at the back of his mind.

Not so Simple

SUPERIOR processing PA 80 is one result of such practical research — in this case the product of attempts to provide compounders with an easy processing masterbatch that blends well with synthetic and natural rubbers. H. C. Bugbee, writing in the current issue of the *Natural Rubber News*, points out that the Malayan Natural Rubber Industry's Co-ordinating Advisory Committee's recent announcement that a concentrated research effort will be applied to developing new blends of natural and synthetic, in a sense stems from the success of PA 80. He adds that this year further research will be carried out in the field of oil extension

When diene rubbers are freely available it has been said that the competition between the natural and the synthetic product will resolve itself into the simple question of which type is cheaper It will never be as simple as this. The research and service given by the supplier will become increasingly important — and by their current efforts the natural producers are showing that they are very well aware of this.

Talent Competition

AN expanding industry today will not be an expanding one tomorrow if it does not keep a constant look-out for tomorrow's executives, scientists and technologists. While comparatively few industries are in direct competition with one another so far as products are concerned, all compete for people, for the talents of the rising generation. A study of the appointments vacant columns of the 'quality' Sunday papers shows that the battle for first-class men is intensifying. And there are signs that the battle is shifting a stage further back, from graduate to grammar school level.

It is good to see that the rubber and plastics industries are aware of this movement. Both the Plastics Institute and the Institution of the Rubber Industry have been organizing young peoples lectures for some time. This week the South Wales and Monmouthshire section of the IRI held an exhibition for school children in Cardiff, coupled with a first-class lecture given by Dr L. Mullins, of the Natural Rubber Producers' Research Association. The exhibition gave the children a comprehensive idea of the plantation, synthetic and manufacturing sides of the industry, and they were captivated by Dr Mullin's story of rubber — lecture is too dry a word to describe it. Certainly the minds of some of the young people were opened for the first time to the idea of a career in the rubber industry.

At the last convocation of the National College of Rubber Technology, A. A. Part, deputy secretary at the Ministry of Education, indicated that the rubber industry was not as well known as it might be in the grammar schools. The Cardiff occasion was a reminder that the material is there for a successful approach to schools on a wider scale. At the moment, among all the sections of the Institution, two young peoples lectures a year are being held. We think this number could well be increased, by each section aiming at producing one such lecture a year. A different centre could be chosen each time, and in this way the whole country could be covered. The cumulative publicity would be great, and the talent attracted into the industry would surely cover the cost many times over.

NEWS *Briefs*

DIENE PLANT IN CANADA — JAPAN'S PLASTICS PRODUCTION—UK FIRMS IN SYDNEY—GOODRICH LOOKS AHEAD — FINLAND'S TARIFF FOR TYRES

●**Formosa** — The International Co-operation Administration in Washington has authorized Formosa to purchase $9m. worth of goods, including rubber and rubber products. The purchases are to be made from US and ICA-specified countries.

●**France** — The Netherlands firm Badger NV has been awarded the main contract for the butyl rubber plant to be built at Strasbourg, France, by Polymer Corp. of Sarnia, Canada. The plant will have an initial capacity of 10,000 tons a year, and is expected to be on stream by the middle of 1962.

●**Yugoslavia** — A new three-year trade agreement has recently been signed between Yugoslavia and Burma under which a variety of products, including rubber, will be exported by Burma in Exchange for industrial goods.

●**Switzerland** — Swiss rubber imports in February totalled 1,680,000 kilos compared with 1,805,000 kilos in February 1960. Natural rubber imports had increased by nearly 25,000 kilos while synthetic imports were 131,000 kilos lower.

●**Japan** — Production of plastics during 1960 showed a 38% increase over the 1959 figure, according to surveys of the Ministry of International Trade and Industry. Total production was 722,400 tons of which pvc accounted for 258,000 tons and melamine for 127,000 tons, increases of 43% and 20% respectively. The largest percentage increases were for polythene (93%) and polystyrene (59%), mainly due to increased demand for building materials and domestic appliances.

●**Italy** — Thermal cracking and polymerization extensions are to be built at Sincat's Priolo, Sicily, complex. A range of plastics materials and various by-products will be produced.

●**Canada** — Polymer Corp. is to construct a full-scale commercial plant in Sarnia, Ontario, for the manufacture of polybutadiene, as previously indicated in *RPW*. The process design of the plant is well advanced and construction is expected to start this summer. Production should start before the end of 1962. Flexible design will mean that the facilities can be adapted to produce other stereospecific rubbers, such as polyisoprene. Output of the plant, estimated at 20,000 tons a year, will be sold in the domestic and export markets.

●**United States** — Plans for record 1961 capital expenditures at the B. F. Goodrich Co., and an expectation that second half 1961 earnings will exceed last year's, have been disclosed in Boston by John N. Hart, the company's vice-president and controller. Mr Hart said Goodrich plans to spend $50m. for expansion and modernization this year. The previous high was $45m. spent in 1954. Last year the company spent $41m.

●**Australia** — The 1961 Sydney Trade Fair, where Russia has booked nearly 30,000 sq. ft of space, is virtually sold out. The largest to be held in the Southern Hemisphere, the fair runs from August 1—12. UK polymer firms who will exhibit include: Bell's Asbestos, British Cellophane and British Nylon Spinners.

●**India** — Production of raw rubber in India during the period 1959/60 covered by the annual report of the Rubber Board, amounted to 24,173 tons — 4 tons more than in 1958/59. Rubber consumption in the same period rose by nearly 5,000 tons to 40,490, and an area of over 21,000 acres was planted with rubber, bringing the total rubber planted area to 305,452 acres.

●**Dominican Republic** — At the opening of a new rubber processing factory at Monsenor Nouel (which will produce more than 50,000lb. of rubber a year), the Secretary of Agriculture announced that by 1964-1965, when 102,000 trees would be in production, it was estimated that 1,020,000lb. of rubber would be produced. Last January the first of a series of rubber factories was opened at Majagual. Further plantings of 89,000 trees in the San Francisco de Macoris and Miches areas are proceeding.

●**Finland** — According to the recent trade agreement which has brought Finland closer to the Seven, although Finland will reduce tariffs on industrial goods by 30% as from July 1, she retains privileges for certain goods. These include tyres and tubes, the tariff on which will be reduced by only 20%.

'Frankly old man, we were wondering if you Shawbury boys could give us a lead on turning carbon black into diamonds.' — 530

Plastics Plant for Rumania

£800,000 ORDER FOR PETROCARBON DEVELOPMENTS

PETROCARBON DEVELOPMENTS is to supply a polystyrene plant to Rumania. An agreement has been signed with the Rumanian state concern Masinimport in Bucharest, and the order is said to be worth over £800,000.

The plant is expected to go on stream by the end of 1962 and will produce both the ordinary and high impact grades of polystyrene. It will employ Petrocarbon's suspension polymerization process. An extension to the plant will produce expanded polystyrene.

Extensive Competition

The contract was obtained by Petrocarbon in the face of extensive international competition, and is the first major order for a plastics plant given to a UK firm since the signing of the Anglo-Rumanian trade agreement last autumn.

FBRAM Members

Rubber manufacturing firms numbering 170 have now joined the Federation of British Rubber and Allied Manufacturers under its new scheme for direct membership of individual firms. Firms whose names came in too late for inclusion in *RPW's* list published last week (page 454) are: The Cumberland Curled Hair Manufacturing Co. Ltd.; Harrison and Jones (Flexible Foams) Ltd.; Plastikade (Manchester) Ltd.; Romac Industries Ltd.; Vinatex Ltd. and Vinyl Products Ltd.

In addition, 21 trade associations and product groups are included in the ordinary membership, and 47 firms supplying synthetic rubber, machinery, chemicals and components to the industry are associate members.

Cheaper Formica

Owing to improved production methods Formica Ltd. are reducing the price of their constructional material Formica Beautyboard with effect from April 1. At the same time certain improvements in the quality of the board have been made possible. The new price is from 6s. 8d. to 8s. 4d. per sq. ft. according to quantity, in five different sheet sizes.

A special double-sided grade is also being made available on April 1 at 10s. 4d. per sq. ft., and exterior grades of both Formica Veneer and Beautyboard will become available towards the end of April, at an additional 3d. per sq. ft.

Allied Structural Plastics

Desmond Kirkness, managing director of the Universal Asbestos Manufacturing Co. Ltd., has been appointed Chairman of Allied Structural Plastics, recently formed by Universal Asbestos in equal partnership with Thermo Plastics Ltd., a member of the Tootal group.

Synthetic Appointments

APPOINTMENTS recently made to the International Institute of Synthetic Rubber Producers Inc. (based in New York) include those of K. G. Burridge, works manager of the International Synthetic Rubber Co. Ltd., and J. Van Der Bie, Shell International, to the technical committee of the institute. The full list of appointments to this committee is given below.

Technical committee chairman: F. W. Hannsgen, Shell Chemical Co., USA; vice-chairman, E. S. Pfau, General Tire and Rubber Co., USA. Other members: Dr Edward Carr, Firestone Synthetic Rubber and Latex Co., USA; Paul Cornell, Goodrich-Gulf Chemicals Inc., USA; K. G. Burridge, International Synthetic Rubber Co. Ltd., England; Yorinori Yoshida, Japan Synthetic Rubber Co. Ltd., Japan; Dr W. W. Crouch, Phillips Chemical Co., USA; D. E. McLellan, Polymer Corp. Ltd., Canada; J. Van Der Bie, Shell International Chemical Co. Ltd., England; John H. McKenzie, United Carbon Co., USA; Dr D. C. McCleary, United States Rubber Co., USA; Dr Thomas W. Boyer, American Synthetic Rubber Corp., USA; Dr Clito Capitani, ANIC, Italy; Dr F. Engel, Chemische Werke Huls, Germany; Dr Ray Schultz, Copolymer Rubber and Chemical Corp., USA; and Merle Wendt, Goodyear Tire and Rubber Co., USA.

New Tractor Tyre from Dunlop

A NEW rear tyre for tractors which is claimed to give twice the mileage on hard roads has been introduced by Dunlop. Known as the RT40 Fieldmaster, it is said to be a major development in tractor tyre design.

The company lists the main properties as: '1. Twice the life on hard roads. Very good tread life on soils. 2. Drawbar pull on heavy soils is excellent and on light soils, more than adequate for normal conditions. 3. Good self-cleaning properties on sticky soils. 4. Very stable sidewall on conditions of high torque'.

The new tyre is the result of concentrated study and evaluation of many prototype tread patterns. The essential feature of the pattern is a club-like, widely spaced, tread bar, which ensures that tread life is increased without loss of ground penetration.

The tyre will be made in the following 11in. sizes: 11 x 28, 4 ply, £31 10s. 6d.; 6 ply, £33 12s. 6d.; 11 x 32, 4 ply, £32 16s. 6d., 6 ply, £34 18s. 6d.; 11 x 36, 4 ply, £34 3s., 6 ply, £36 15s. 6d.; 11 x 38, 4 ply, £35 9s. 6d., 6 ply, £40 14s. 6d.

The millionth Scottish-built Goodyear tyre is taken from its mould at the company's Garscadden, Glasgow, factory. Receiving the tyre is plant manager T. F. Minter. The factory has been in operation since September 1957

Post-mortem on Speke

TWO-MAN COMMITTEE REPORT ON DUNLOP STRIKE

THE recent two weeks' unofficial strike at Dunlop's Speke factory should never have occurred, according to the report of a two-man committee of inquiry. The committee, which consisted of F. I. Tuckwell, Dunlop's chief personnel officer, and R. Davis, a national officer of the Transport and General Workers' Union, found that the strike of 3,000 workers was the culmination of several years' deterioration of labour relations at the factory. Twelve stoppages of some size have taken place since 1960, says the report.

It adds that while the management did not actually break its National Agreement, it adopted an 'unusually rigid adherence' to what it thought were the correct compensation payments, disagreement about which sparked off the dispute. (Workers in the sports department were sent home in February during structural alterations. The dispute was about how much they should be paid for time lost. See *RPW*, February 18, 245.)

The report criticises unofficial shop stewards' organizations for attempting to spread the strike and says, as a further point, that negotiating procedures were incorrectly used.

The committee makes a number of suggestions for improving labour relations. It thinks that full-time trade union officials should intervene earlier in a dispute; better training should be given to both sides entrusted with carrying out the provisions of all stages of negotiating procedure; and that the earlier stages of negotiating procedure at shop floor level should be used more frequently.

Chemicals from Petroleum

At the next meeting of the heavy organic chemicals group of the Society of Chemical Industry, on April 7, at 14 Belgrave Square, London, S.W.1, a paper on the present trends of development in chemicals from petroleum in France will be presented. The speaker will be P. A. Laurent of the Compagnie Française de Raffinage. He will make particular reference to the uses of ethylene, propylene, butylenes and butadiene, and will also draw comparisons between petrochemical developments in France and the USA. No tickets are required for the meeting, which begins at 6 p.m., and non-members will be welcome.

Si Rubber Cheaper

The UK price of Cold-Cure Silastomer, the silicone rubber which cures without heat, has been cut by about 5% depending upon quantity, Midland Silicones Ltd. has announced.

Vitaweb Price Cut

Reductions in the prices of Vitaweb rubber strapping of approximately 18% were announced by Vitafoam Ltd. this week.

Vitafoam has also extended its quantity rebate system so that further discounts are based on the total of orders for furniture components. These can include Vitafoam latex foam cushions and moulded units, polyether and pvc foam and glass fibre shells, as well as Vitaweb.

BICC FORMS TELCON PLASTICS

British Insulated Callender's Cables Ltd. has formed a new company, Telcon Plastics Ltd. From today (April 1), this company, centred at Green Street Green, Orpington, Kent, takes over the entire range of activities of the plastics division of The Telegraph Construction and Maintenance Co. Ltd. It will continue the manufacture and development of all the plastics products with which the name Telcon is already associated — the plastics coating of papers; mouldings and tubing; processed gutta percha and balata; plastics powders for dip-coating and other applications; sheeting for vacuum forming and fabrication, and coated materials and laminates for use in specialized packaging.

The board of the new company is: W. C. Smith, chairman; J. L. Fergus, general manager; D. Norman-Thomas and H. F. Wilson. The company secretary is L. G. F. Sliney.

Nylon Plant for Ulster

ENKA AND AKU FORM NEW COMPANY FOR PROJECT

PLANS for the erection of a plant to manufacture nylon at Antrim, Northern Ireland, have been announced by British Enkalon Ltd.

British Enkalon is an Anglo-Dutch company formed jointly by British Enka Ltd. of Aintree, Liverpool and Algemene Kuntstzijde Unie of Arnhem.

The proposed factory will employ about 750 workers initially, and may expand to the region of 2,000 workers if present plans and expectations materialize. Both nylon yarn and raw material for plastics industry will be produced.

Great Significance

Commenting on this development, Lord Chandos, chairman of the Northern Ireland development council, said that the event was of great significance. When the plants already built and projected were in production, Northern Ireland would be turning out the full range of man-made fibres, he added. The raw materials for a wide range of industries would thus be in production in Northern Ireland, and would prove an added attraction towards the establishment of a thriving industrial area.

Acrylic fibres and viscose rayon are already being produced in Northern Ireland by Chemstrand Ltd. and Courtaulds Ltd. respectively, while I.C.I. is building a Terylene plant and may also produce polypropylene.

Japan to Increase SBR Consumption

Japan's synthetic rubber consumption in the fiscal year 1961 was expected to amount to 90,200 tons, compared with 67,000 tons last year, the Japanese Ministry of Trade has announced.

Main reason given for the anticipated increase was that consumption of car tyres and tubes was expected to increase steadily and that the demand for latex from the domestic market would also rise.

The Ministry added that synthetic consumption this year was expected to be 35% of Japan's rubber consumption.

The target set for export of rubber articles this year was US$109.7m.

Irish Ferry Liferafts

A further 22 Dunlop inflatable liferafts have been ordered by the British Transport Commission for their passenger ships *Cambria* and *Hibernia*.

The two ships, which ply between Holyhead and Dun Laoghaire, now carry 85 of these 20-man self-inflating liferafts between them.

Regal 300

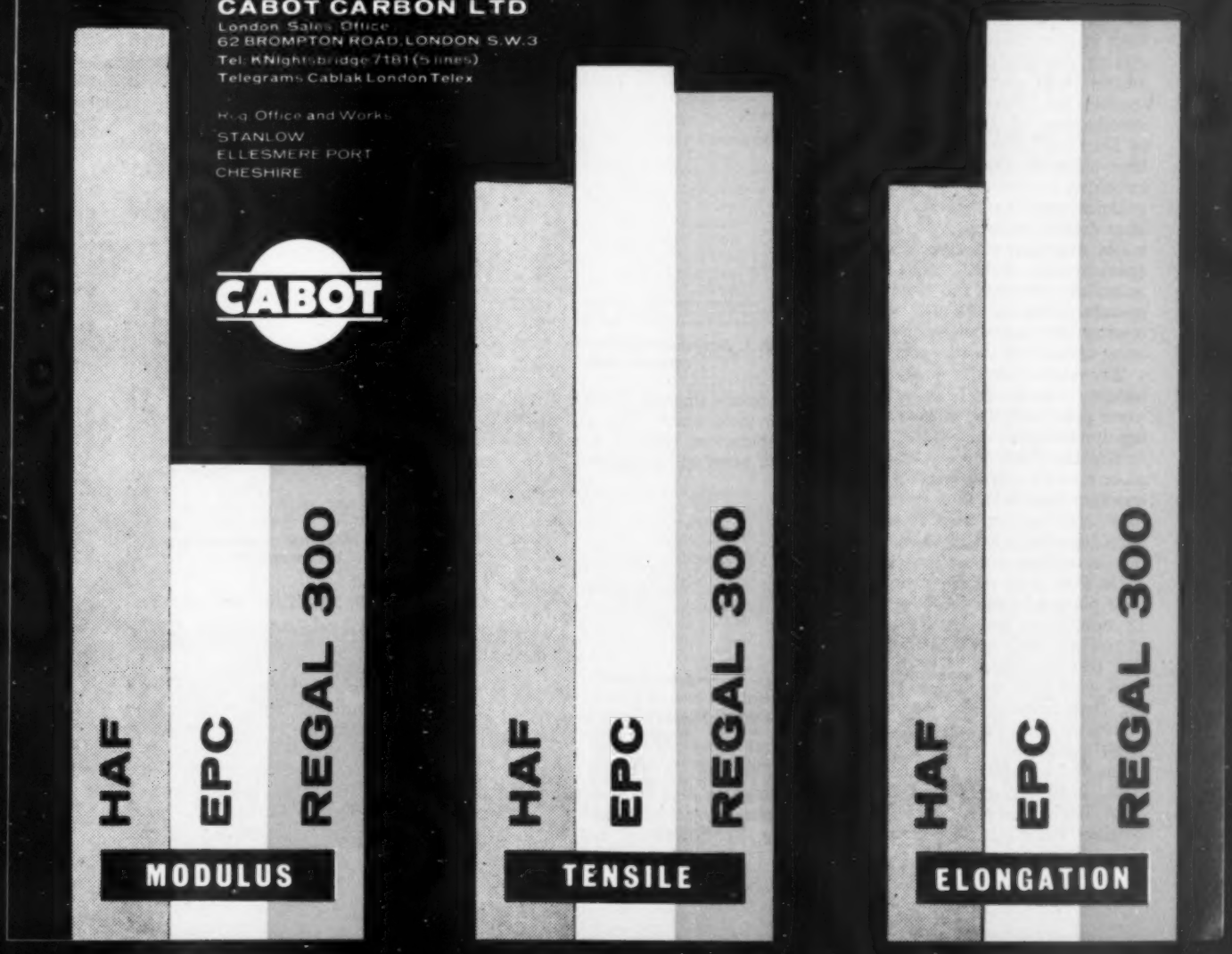
A BREAKTHROUGH IN CARBON BLACK TECHNOLOGY

A new Low Modulus, High Elongation reinforcing oil furnace black with particle size and surface area close to Vulcan 3 (HAF).
Regal 300 provides reinforcement similar to channel black — at much reduced cost — combined with the faster cure rate of HAF types.
The Regal blacks — Regal 300, Regal 600, and Regal SRF — are manufactured by a new and exclusive process (patents applied for).
All are in full production at the Stanlow plant of —

CABOT CARBON LTD
London Sales Office
62 BROMPTON ROAD, LONDON S.W.3
Tel: KNightsbridge 7181 (5 lines)
Telegrams Cablak London Telex

Reg. Office and Works
STANLOW
ELLESMERE PORT
CHESHIRE

CABOT



Polymers for Metals

STRUCTURAL PLASTICS IN THE CAR INDUSTRY

MANY varied figures have been quoted for the amount of plastic that is used in the modern British car, ranging from 4lb. to 20lb. It seems probable that an average figure of 13lb. per car would not be far off the mark.

In the USA the figures are rather higher and it has been said that the present usage is around the 25lb. per car mark.

Despite the disagreement between most authorities about the actual figures there is no disputing the fact that the use of plastics in automobile applications is increasing rapidly. And there is every indication that this increase will continue for some time to come.

New Materials

These estimates and forecasts have not taken into account the development of new materials with properties making possible their use for applications not previously considered feasible for plastics materials. The introduction of Delrin acetal resin by Du Pont just over a year ago must have caused some revisions in estimates.

Delrin has been readily accepted, after exhaustive tests, by at least one major American car manufacturer for extensive use on 1961 models and is under consideration and test by many manufacturers in the US and this country for applications previously using exclusively die-cast alloys.

The recent recession in the UK car industry seems to have passed its worst point and the industry is picking up strongly.

The Du Pont seminar which took place recently (*RPW* March 18, 426) was therefore held at a most opportune time to give the British motor manufacturers more information on this interesting engineering material.

Du Pont have only been marketing their plastics in this country for some 18 months but they are already being extensively used by car manufacturers and their suppliers. Lucite acrylics have good light stability and processing characteristics and are used for decorative and lighting applications. Zytel nylon and Teflon fluorocarbon resins find uses for numerous applications, including gears and bushings, door latch wedges, self-lubricating bearings and electrical accessories.

The two most recent additions to the range are Teflon 100 and Delrin. Teflon 100 is a new fluorocarbon resin which combines most of the advantages of conventional ptfe with the ability to be processed by the production methods used for conventional thermoplastics, such as injection moulding and extrusion.

Delrin is a high polymer of formaldehyde, a thermoplastic possessing rigidity and mechanical strength over a wide range of service temperatures. Other attractive properties include high resistance to creep and fatigue, resistance to organic chemicals such as oils, greases, fuels, etc., and dimensional stability even under conditions of high humidity.

Physical Properties

The load bearing properties of Delrin are good, both in tension and compression (Fig. 1). At room temperature the elongation is 16% and

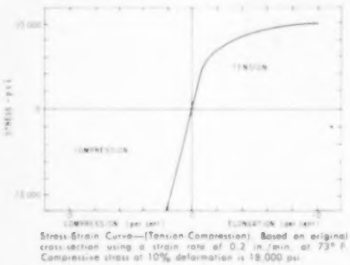


Fig. 1. Stress-strain curve (tension-compression)

the tensile strength 10,000 psi with no true yield point (Fig. 2). At higher temperatures there is a well defined yield point and elongation of between

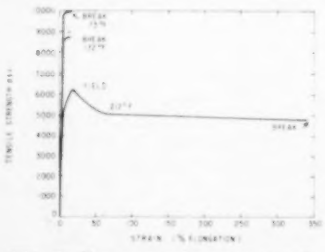


Fig. 2. Stress-strain curves at 3 temperatures

350 and 500%. Even at temperatures as high as 250°F. an unusually high degree of yield strength is retained (Fig. 3). Moisture has very little effect on the tensile properties and the material is stiff as well as tough. As shown in Fig. 4 the high modulus of elasticity is largely retained even

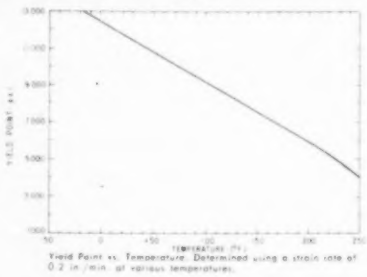


Fig. 3. Yield strength vs. temperature

at high temperatures and when continuously submerged in water.

Resilience

Inherent stiffness coupled with high strength makes Delrin suitable for applications where the ability to resist heavy loads without deflection is required. The recovery of the material after removal of a load is almost complete and in this respect it is very similar in performance to a steel spring, making it an ideal material for snap-fit assemblies.

The outstanding toughness property of Delrin is its resistance to repeated impact. The unnotched Izod impact

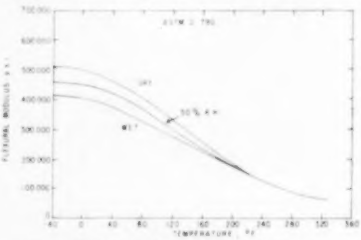


Fig. 4. Modulus of elasticity vs. temperature

value is 20.5ft.-lb./in while notched samples produce values around 1.5ft.-lb./in. The difference between these two values emphasizes the importance of eliminating all sharp corners in design which operate as stress concentrators. The resistance to impact is retained at low temperatures and among the properties listed in Table 1 is the unusually high fatigue endurance limit; this coupled with the impact and tensile properties

suggests many applications including gears and bearings and other structural uses.

Creep Resistance

Creep occurs with all plastics materials but, as may be seen from Fig. 5, Delrin has outstanding resistance to creep when compared with

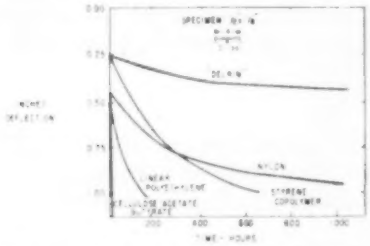


Fig. 5. Creep comparisons (90% RH and 150 F)

other thermoplastics, particularly at high temperatures.

Metal Replacement

The unique combination of properties possessed by Delrin affords the designer with an opportunity of replacing metal parts both on a performance and a cost basis. Light weight, corrosion resistance and colour ability combined with adequate mechanical properties enable Delrin to compete on a technical basis with ferrous metals, brass, and diecasting alloys of zinc, aluminium and magnesium. The method of fabricating thermoplastic parts by injection moulding and the possibility of moulding single piece components, which in metal would necessitate several separate components and expensive finishing operations, enables Delrin to compete on a cost basis with metals despite material costs, which in some cases are higher than those of the metals being replaced.

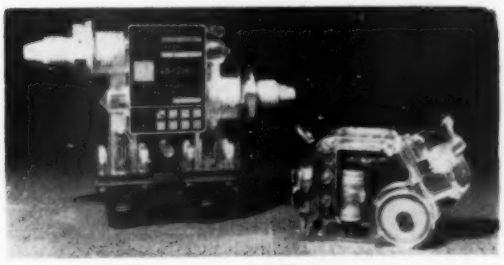
Recent considerable reductions in the price of Delrin (*RPW* February 25, 284) make a cost comparison even more favourable to the plastic and, in common with the normal trend in prices of new materials, it seems likely that increased usage of Delrin will enable the price to be reduced still further.

The prospects for Delrin in the motor industry look bright and the potential market in this and other fields where a structural plastic such as this could find outlets is great.

Present estimated capacity for Delrin production at the Parkersburg, West Virginia plant is 30m. lb./year and this is expected to reach 100m. lb. by 1965 — an indication of Du Pont's confidence in the product.

TABLE 1

Property	ASTM No.	Average Values for 'Delrin'
Tensile strength and yield point, 73 F.	D638	10,000psi
158 F.	D638	7,500psi
Compressive stress at 1% deformation	D695	5,200psi
at 10% deformation	D695	18,000psi
Flexural modulus, 73 F.	D790	410,000psi
250 F.	D790	90,000psi
100% RH 73 F.	D790	360,000psi
Flexural strength	D790	14,100psi
Shear strength	D732	9,510psi
Heat-distortion temperature, 264psi	D648	212 F.
66psi	D648	338 F.
Fatigue endurance limit, 50 to 100% RH 70 F.	—	5,000psi
Water absorption, 24 hours' immersion	D570	0.12%
Melting point (crystalline)	—	347 F.
Flow temperature	D569	363 F.
Deformation under load (2,000psi at 122 F.)	D621	0.5%
Coefficient of linear thermal expansion	D696	4.5×10^{-5} per F.
Thermal conductivity	—	1.6 BTU/hr./sq.ft./F./in.
Specific heat	—	0.35 BTU/lb./F.
Modulus of rigidity	—	178,000psi
Dielectric constant, 73 F., 10^2-10^5cps	D150	3.7
Dissipation factor, 73 F., 10^2-10^5cps	D150	.004
Dielectric strength, short time	D149	500V/mil.
Volume resistivity	D257	6×10^{14}ohm/cm.
Resistivity	D257	2×10^{13}ohm



The structure of components used in aircraft liquid oxygen breathing systems is shown by British Oxygen Aviation Services by reproducing them in Perspex. These models have been used for display and teaching purposes

BICC and Thermotank

By a recently completed agreement British Insulated Callender's Cables Ltd. will act as distributors to the electrical industry in the UK of fibre-reinforced resin materials manufactured by Thermotank Plastic Engineering Ltd., Chapelhall, Lanarkshire.

The agreement is the outcome of several years of collaboration between the two companies to develop reinforced plastic materials which combine high insulation performance with great tensile strength. This has resulted in the production, by a continuous process of extrusion or of combined extrusion and lamination, of tubes and solid sections in various sizes and profiles in fibre-reinforced synthetic resins. These are said to be already proving valuable in solving problems where high electrical and mechanical stresses occur.

Applications

Among the applications in which the material is claimed to offer substantial advantages are stay-wire insulators, operating rods and bars for switchgear. It is also said to have a growing use and great potential in overhead lines for power distribution and traction systems, including tension members, section insulators and support arms.

Foam Adhesive

A new adhesive, Evo-Stik 'Impact' 633, consisting of a one-part rubber/resin formula, has been developed by the industrial adhesives division of Evode Ltd., Stafford, to provide a strong resilient bond when joining polyurethane or polyether foam to materials such as fabric, wood and metal, without affecting the micro-cellular structure of the foam.

The adhesive is said to provide a strong, efficient bond for micro-cellular foam to itself without causing any hardening effect at the joint. It is water and oil-proof, and resistant to high temperatures.

One gallon is sufficient to bond approximately 15 sq. yd. of foam, allowing to coat both surfaces. The bulk price is 29s. 3d. a gallon.

BMP Buying

British Moulded Plastics Ltd. announces that the buying for the company will in future be carried out by National Plastics Ltd., which is another wholly-owned subsidiary of National Plastics (Holdings) Ltd.

Existing contracts will be continued, but National Plastics Ltd. will act as agents of British Moulded Plastics in all matters arising out of the contracts.

CO-OPERATIVE RESEARCH

Times were when scientists pursued their urgent but sometimes vague enthusiasms in a sort of ivory tower detachment. In many cases they were either unaware of or cared nothing for the needs and aims of industry. Those days are long since gone. Research in most fields now is a two-way business.

Thus in the field of rubber antioxidants, research is based on co-operation between organic and physical chemists and the rubber technologists. Years of experience have built up a background of information on the influence of chemical structure on technical efficiency, and the correlation between chemical activity and technical effect.

The build-up of knowledge over some 30 years has in this way been a live and progressive process, combining the tools of organic preparative, analytical, and technological science and enabling I.C.I. to offer currently to the rubber industry a range of non-staining antioxidants of exceptional variety.

Adequate definition of the target in mind is followed by selection of the particular field of chemistry. Certain sorting tests can be carried out by the organic and physical chemists, the more likely candidates among the compounds prepared being subjected to technological evaluation.

Before a new antioxidant is launched a thorough evaluation is carried out. In the preliminary stages a limited number of test-compounds are submitted to conventional ageing tests in the oxygen bomb and the air oven. For this purpose I.C.I. maintain a unit comprising four large oxygen bombs held at 70°C and a smaller oxygen bomb unit which can be operated under various conditions as required. Air oven ageing is carried out in fluid-heated individual container units in order to avoid cross-contamination and to ensure constant temperature. Staining tendencies are evaluated by exposure of rubber to a u.v. light source or to sunlight, the degree of discoloration being measured by means of a reflectance spectrophotometer. A Xenon-lamp unit has been recently installed and is expected to replace the u.v. lamps as a source of illumination.

There follow then more detailed evaluations on different rubber compounds based on natural and synthetic rubbers. The range of tests is extended to include high-temperature air oven ageing and flex-cracking. Special applications involve the measurement of properties such as compression set, extractability, and migration. Conventional ageing tests are supplemented by measurements of oxygen absorption and stress relaxation.

Hundreds of chemicals are subjected to preliminary sorting tests but of these only a few undergo detailed evaluation. This is not because the many show no merit but because they lack the particular qualities that are being sought. The final result is a range of non-staining anti-oxidants which offer a product for almost every application. New products will be added to the range and older products will gradually be replaced as they become out-moded.

Co-operative research continues.

IMPERIAL CHEMICAL INDUSTRIES LTD, LONDON S.W.I

Advertiser's announcement. X194

The frog in the well

knows nothing of the great ocean

The science and technology underlying non-staining antioxidants is indeed a great ocean of knowledge and experience, the depths of which can be plumbed only by the largest organisations equipped with specialized resources.

I.C.I. technical service, backed by thirty years' continuous research in the development of NONOX non-staining antioxidants, embodies the widest possible range of experience, and can be relied upon to give accurate information and sound technical advice. The products on the NONOX range are supported with detailed technical literature, and the service of I.C.I. rubber technologists, which is second to none, is available to all rubber manufacturers.

IMPERIAL CHEMICAL INDUSTRIES LIMITED
LONDON SW1 ENGLAND

ICI

X143

Foaming at Hirwaun

4,000 MILES OF POLYETHER FOAM A YEAR PRODUCED

THE polyether foam plant at Dunlopillo Ltd.'s Hirwaun factory is now in full scale production. It can produce nearly 10m. cu. ft. of foam a year — enough to form a 4in. thick, 18in. wide strip over 4,000 miles long. The foam will be sold under the name Dunlopillo, and will be marketed jointly with the company's latex product.

The foam making machine combines the operations of polymerization and product manufacture into one single, fast-flowing process, as shown in the sequence pictures below. Isocyanate and a polyglycol are mixed and poured from a delivery head into a moving trough assembled on the run from advancing strips of treated paper, which form a kind of mould. Foaming takes place in a controlled manner immediately the liquid hits the trough. While passing through a long tunnel, the liquid expands to about 30 times its original volume. At the end of the tunnel, the paper trough is peeled away and the finished product emerges at a rate of 7ft. per minute.

Domed Top

This 'loaf' has a slightly domed top, culminating in a skin which is removed by a splitting operation, the flayed loaf passing through a heated tunnel. It then passes on through a mangle to break down any closed cells, finally being cut to length automatically and checked.

The process is very carefully controlled. For example, if the output of one of the metering pumps supplying the isocyanate or the glycol to the mixing head varies by as little as 1%, foaming is interfered with and the product has to be scrapped. This can be a costly matter, as the machine's output is valued at £35 a minute.

The Economic Angle

Dunlopillo points out that polyether foam has a number of attractions from the economic angle. In the first place, the raw materials from which it is made are stable in price, so that long-term marketing plans can be made more accurately. In the second place, output from a polyether plant is very high compared with that of a latex foam plant of comparable size. The polyether foam plant at Hirwaun makes up to 140lb. of finished foam product every minute. A latex foam plant of comparable size would operate at a production rate of only about 10-15lb. of finished product per minute. A further advantage of polyether foam, from the production angle, is that no heat has to be applied for froth-setting, drying or vulcanization, although considerable heat is generated chemically in the process: this is conserved and boosted to deodorize the product.

Products made from polyether can be a fraction of the weight of comparable latex foam products. This cuts transport costs and helps to offset the higher cost of the raw materials.

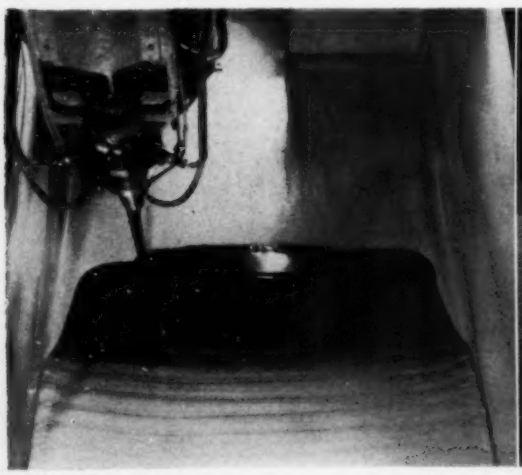
Technical Problems

Against these advantages must be set the fact that it is necessary to find a market for the skin top layer and also for the 'off-cut' produced when the loaf is cut into the shapes required by the market. However, both types of 'by-product' are suitable for many different uses. These include anti-vibration, shock-absorption and cushioning uses, as well as applications which take advantage of the good sound-absorption and heat-insulation properties of polyether foam. Dunlopillo is carrying out market research into these and other possibilities.

Off-cut material is also used within the Dunlopillo Division itself, where it is cut up into ½in. chips and joined together with an isocyanate adhesive. This product is known as Repol and is used in sheet form as base blocks for Dunlopillo mattresses. In this way a comfortable double-density 6in. mattress can be made by attaching a 2in. layer of Repol to the underside of a 4in. Dunlopillo moulding.

A clear picture of the relative

1 **The liquid polyether flows out of the delivery head as it moves across the paper trough advancing towards the camera. Foaming begins at once**



2 **Now fully expanded, the foam completely fills the paper trough. At this stage the volume is 30 times that of the original materials**

'comfort' properties of latex, polyether and polyester foams, shown against that given by steel springs as a yard-stick, can be obtained by following the movements of each system after a load has been applied. The general shape of the movements is as shown in Fig. 1.

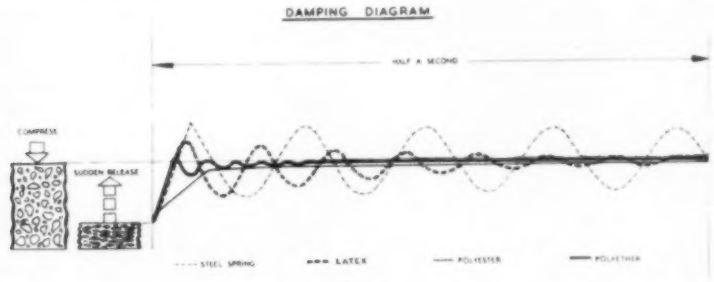


Fig. 1

It can be seen that a steel spring goes on vibrating for a long time after the load has been applied and released. On the other hand, movement on a latex foam unit is damped out more rapidly and this is one of the major reasons why latex foam has displaced steel springs in many upholstery applications. As the diagram shows, the movement on polyester foam is damped out almost at once. While this is attractive for the vibration insulation of delicate instruments, it is not so comfortable from the upholstery point of view.

Close to Latex

It will be seen that the movement on a unit of polyether foam is more like that of latex foam. In actual fact, Dunlopillo claims to be producing a polyether that is quite close in 'upholstery' properties to latex.

Polyether foam can be made by a 'pre-polymer' or a 'one-shot' process, and the Hirwaun plant is constructed to use either method as required.

The longer, more regular chains built up by pre-polymerization result in a polyether foam with a 'rubbery' feel, which is close to natural latex foam. The shorter irregular chains built up by the one-shot process produce a foam which is less 'rubbery' but which enables an extremely light 'snappy' foam to be produced for lighter applications.

Seating Quality Grade

The pre-polymer foam is a seating quality grade and is being made at the Welsh plant in a golden colour. Dunlopillo intends to market it under the name 'Golden Crown'. The general quality will be manufactured in other colours.

Certain quantities of the product will be shaped after initial manufacture, and cavitied products up to 4in. thick can be produced. Recent advances make it possible for foaming to take place in individual moulds, and Dunlop says this process is under development.

Dunlopillo comments that generally speaking, it is found that polyether foam is opening up fresh markets for rubber cushioning material rather than displacing latex foam. 'There is, therefore', the company adds, 'every reason why the production of polyether and latex foams should go on side-by-side, with each material being used according to its special properties'.

Welded Piping

Electrodes and tooling enabling piping to be formed and welded into the seams of such articles as handbags, travel cases and vanity cases, using strips of the same sheeting material as main body of the article, have been developed by Radio Heaters Ltd.

The strips of pvc sheeting (usually offcuts) enclose a piping/beading string of the conventional type such as is used on stitching applications. The size of the piping can be varied, and the arrangement of tooling enables unskilled labour to be employed, while a good production rate can be maintained.

Plastic Tank Wheel

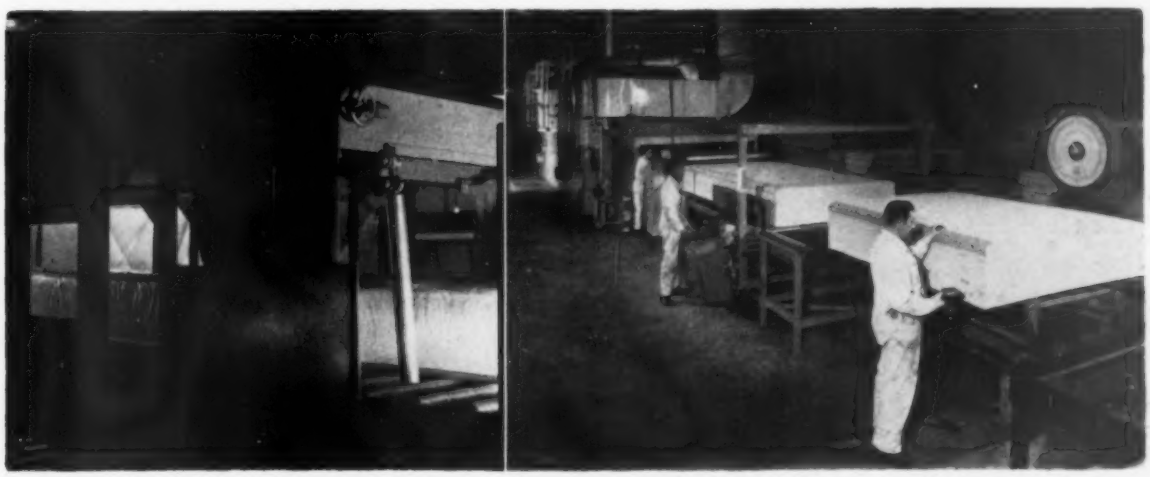
Firestone Tire and Rubber Co. in USA is developing reinforced plastics tank wheels intended to reduce the weight of a typical US Army tank by more than 2,000lb.

The experimental tank wheels are claimed to be the largest articles ever pressure-moulded with an epoxy compound. They are 7½in. wide, nearly 25in. in diameter, and strong enough to support ten times the required load.

Heat dispersion from the tyre has been arranged by bolting a steel rim to the plastic wheel and cementing the tyre to the steel.

3 **The foaming finished, the sides of the paper trough are stripped away as the loaf moves on down the tunnel**

4 **A continuous loaf emerges from the machine and is automatically cut to length, weighed and checked**



A monthly review of important papers on polymers published in the European technical press

European Technology Review

By S. H. MORRELL and R. J. MOSELEY, Rubber and Plastics Research Association of Great Britain

Carbon Black in Vulcanization

DOES the carbon black play any part in the vulcanization of a black-loaded rubber compound? A paper[1] by Blokh and Melamed suggests that it does. After reviewing present ideas on the structure and surface area of carbon black, and the presence of active oxygenated groups on the surface of the particles, these authors proceed to show the existence of chemical reactions between carbon black and sulphur, and also between carbon black and accelerators.

The effect on the physical properties of the vulcanizates was also demonstrated of the prior removal of these active groups.

In the first part of the paper, experiments are described in which channel black and lamp black are heated to vulcanizing temperatures in the presence of radioactive sulphur (S^{35}). The uncombined sulphur was then removed by cold extraction with successive amounts of benzene over a period of one month. In one control experiment the mixture was not heated, and in another the constituents were mixed after they had been heated for a similar period.

Measurements of the residual radioactivity of the carbon black showed that more chemical reactions occurred with channel than with lampblack, and that no chemical reaction took place unless the black and sulphur were heated together. The authors did not suggest the nature of the compounds formed.

In a similar series of experiments, MBT labelled with S^{35} was used in place of the sulphur. Once again the channel black was shown to acquire more radioactivity than the lampblack, but both blacks were shown to react to some extent with MBT in the cold. Similar results were also obtained with radioactive TMT.

When the active groups on the surface of channel black were removed by heating at temperatures up to 1,700°C., the physical properties of the vulcanizates were markedly diminished. As would be expected, thermal blacks were less affected and lampblacks hardly affected at all by the treatment.

The authors also reported experiments in which the carbon black was heated with sulphur and accelerators to 140°C. prior to mixing with the rubber, and stated that such a procedure increased the tensile strength and modulus of vulcanizates. The suggestion was also made that these products should be prepared in briquette form to prevent decomposition on storage.

Finally, isotopic exchange was shown to occur on heating to vulcanizing temperatures a mixture of MBT and radioactive sulphur which had been deposited from solutions on to a carbon black surface. The rate of exchange did not, however, depend on the activity of the black in this instance, but on its acidity.

Heat Treatment of Carbon Black Stocks

The interaction of black with rubbers during heat treatment is also the subject of a recent German paper[2]. Carbon black, to the extent of 45 parts by weight, was mixed with various synthetic rubbers in an internal mixer for six minutes at an elevated temperature which reached a maximum of 175°C. The stocks were then allowed to cool for 24 hours and were then re-processed for five minutes to a final temperature of 160°C. Following a further storage for 48 hours, sulphur and accelerators were incorporated at a mixing temperature of 125°C.

Measurements of the bound rubber content showed that natural rubber compounds gave the highest values after the first mixing, but synthetic rubbers, particularly those polymerized at elevated temperatures, increased in bound rubber content with the amount of processing received. In all cases, the bound rubber content increased with the surface area (BET) of the carbon black particles, the largest values being given by natural rubber.

Next in order of bound rubber content, were hot-polymerized SBR, hot polymerized nitrile rubber, and finally cold-polymerized SBR. The Defo hardness of a series of unvulcanized stocks containing different blacks increased linearly with the bound rubber content, but the relationship was different for each type of polymer: thus, at the same level of bound rubber content, natural rubber gave a lower Defo hardness than hot SBR, which in its turn was softer than hot-polymerized nitrile rubber and cold SBR.

While the tensile strengths of compounds containing cold SBR were improved by hot mixing, little effect was noticed with natural rubber, whilst compounds containing hot SBR showed a lower tensile strength and higher hardness after hot mixing. Resilience increased when cold SBR compounds were heat-treated, but natural rubber vulcanizates only showed an improvement when the test was made at 75°C. The heat build-up of cold SBR vulcanizates was decreased quite markedly by heat treatment of the stock. Hot mixing of cold polymerized nitrile rubber was also found to give enhanced physical properties to the vulcanizates.

The effect of hot mixing on scorch time was also investigated. When sulphenamide accelerators were used in the compound, it was found advisable to add the accelerator on a cool mill after the heat treatment, otherwise the delayed action effect was considerably impaired.

Ultrasonics in the Preparation of Polymers

Two recent Russian papers[3,4] gave suggestions for the use of ultrasonics in the preparation of polymers. The first described the formation of block co-polymers by treatment of solutions of polymers with ultrasonic vibrations. The vibrations caused the rupture of the polymer chains with the formation of free radicals: these then combined in a random manner to give block polymers. Similarly, graft polymers could be produced by the treatment of a solution of a polymer in which was also dissolved a polymerizing monomer.

The second paper described the use of ultrasonic vibrations to remove catalyst residues from low pressure polythene: this is similar to the use of these vibrations in the aluminium industry for refining casting melts.

REFERENCES

[1] G. A. Blokh and Ch. L. Melamed, *Izv. Vyssh. Uchebn. Zaved. Tekhn. Legk. Prom.*, 1959, No. 2, 28-38, RABRM translation No. 847.

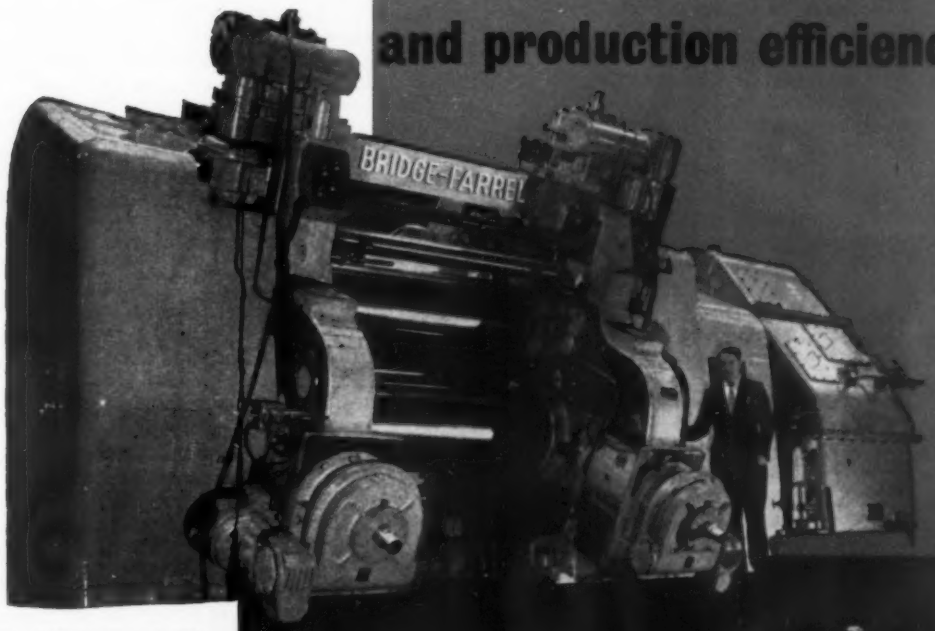
[2] S. Reissinger, *Kaut u. Gummi*, 1960, **13**, No. 7, WT 195-198, RABRM translation No. 850.

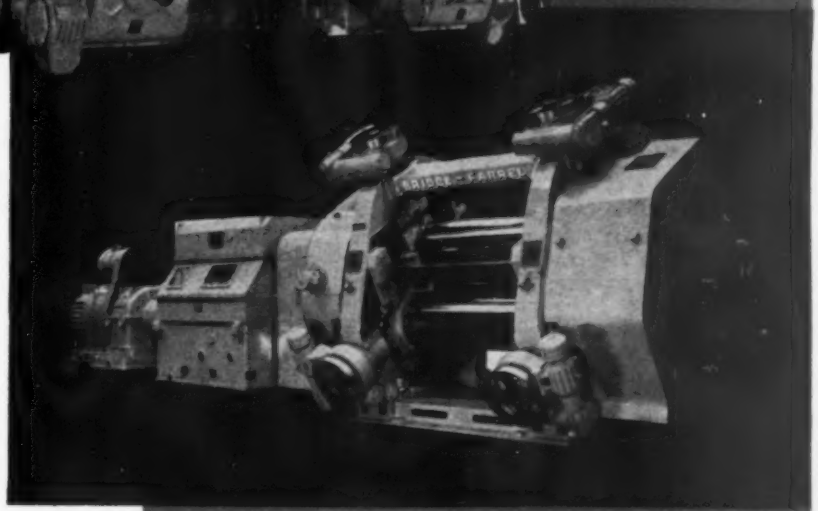
[3] M. S. Akutin, N. Ya. Parlashkevich, I. N. Kogan, S. P. Kalinina and L. I. Menes, *Primenenie Ul'traakustiki k Issledovaniyu Veshchestva*, 1960, Vyp. 10, pp. 47-59, RABRM translation No. 846.

[4] A. M. Ginstling and A. A. Baram, *Izv. Vyssh. Uchebn. Zaved. Khim. i Khim. Tekhn.*, 1960, **3**, No. 1, 170-171.

BRIDGE FARREL equipment

. . . acclaimed as the ultimate in design and production efficiency





28" x 74" Inclined 'Z' Plastics Calender.

Advanced engineering features include patent hydraulic loading on the final nip and all the finest features of Plastic Calender Design.

BRIDGE-FARREL calenders give tolerances of ±.0001" on thin calendered plastic film at speeds up to 320ft. per minute.

Bridge-Farrel 24" x 66" 3 Roll Triangular Calender. The illustration shows one of several recently built and in operation, and considered to be the fastest precision Rubber Calenders in the world.

BRIDGE FARREL equipment for the Plastics Industry

DAVID BRIDGE & COMPANY LIMITED CASTLETON, ROCHDALE, LANCASHIRE

Telephone: Castleton Rochdale 57216 Telegrams: Coupling Phone Castleton Lancs.

London Office: Broughton House, 6, 7, 8, Sackville St., Piccadilly, W.1. Phone: Regent 7482. Grams and Cables: Edmonson Piccy London

In Continuous technical association with the FARREL-BIRMINGHAM CO. INC., U.S.A. for over 40 years on the BANBURY MIXER and special machines

VIEWS and REVIEWS

Moscow Learns from Shawbury

RECENTLY I wrote commending the brevity of the writing in *Soviet Rubber Technology*, the English translation of the Russian journal *Kauchuk i Rezina* by the Rubber and Plastics Research Association in collaboration with Maclaren and Sons, publishers of *RPW*. As a result, G. A. Shires took up the matter with Dr Watson, the director of the RAPRA, who talked it over with Mr Lambert, the translator, and Dr Scott, the editor. An interesting angle was revealed, an unsuspected impact of British on Russian technology and technologists.

What has happened is that Shawbury has been able to teach (without setting out to do so) and Moscow has been willing to learn. In translating from the Russian and editing the English version, RAPRA has deliberately trimmed down the papers, removing certain irrelevances and condensing wording wherever possible consistent with clarity.

A fortnight ago, I reported how very teachable are the Chinese. So, too, are the Russians, or as the RAPRA put it, 'they seem very responsive to constructive criticism'. Consequently, they have learned from the Shawbury translation and the translators can now detect an improvement in the Russian originals.

This gratifying result has wider implications. Those of us who are concerned with finding a way of dealing with the masses of words presented to us every day, in one way and another, without losing the knowledge and information they are intended to convey, will welcome this occurrence and ask how it can be applied in other ways.

Microscopy of Rubber

I am pleased to be able to say that C. H. Leigh-Dugmore's new book, *Microscopy of Rubber*, is an excellent example of how to convey clearly, simply, and briefly quite a large mass of technical information. Published by Heffers for the Institution of the Rubber Industry, it costs 15s. for members of the IRI or 25s. for non-members.

In his preface, the author gives his first words of thanks to 'Dr Donald Parkinson for his help and encouragement over many years'. The book is a kindly, careful account of the work done, mainly in the last half-century, by other people, for Mr Leigh-Dugmore is too modest to over-emphasize his own important contributions to the subject.

It is a short book because it sets out to be so and because Mr Leigh-Dugmore can write simple, clear prose. He disclaims any attempt to write a textbook or to provide a history, though he necessarily describes methods and has to sketch the evolution of techniques and of understanding. 'The purpose of this monograph is to show how microscopy has been and can be used in rubber science and technology', is his first sentence. After reading the book, I think he has succeeded excellently in the first part, but I would have liked him to say more about the second, to indicate some of the problems in which microscopy might be expected to be of help.

In all, the book has only about 100 pages, of which about 60 are text, 25 are illustrations (almost without exception excellent), seven are lists of references, and eight are indexes. It has five chapters: Introduction, Techniques, Polymers, Compounding, and Properties of Rubber. Its style is so easy and its matter so well thought out and so carefully arranged that it can be read and absorbed at a sitting, while at the same time, its indexes and references are so good, in so far as I can check them, that it is likely to prove that most unusual book — one that can be read as well as one that can be used for reference.

'Pigment' Microscopy

Plaste und Kautschuk for January 1961, Vol. 8, No. 1, pp. 51-3, carries a paper in German by the Czech authors Kolar, Pelzbauer, and Kaspar, of the Research Institute of Resins and Lacquers, called 'Determination of the Particle Sizes, the Distribution and Specific Surface of Pigments for Paints'.

This investigation is of particular interest because it sets out to compare and evaluate methods so far not generally used in Czechoslovakia but well established elsewhere. These include: the electron microscope, the sedimentation technique of Andreasen, the BET gas adsorption process, and the Carman permeability method. The powders investigated were five commercial brands of titanium dioxide and three of calcium carbonate.

The authors come to the conclusion that microscopical techniques have advantages over sedimentation methods, in accuracy and also because they give information about the actual shape of the particles and often the type of surface, *e.g.* porosity. Sedimentation methods, they say, are most suitable for rapid, process-control determinations. For estimating the specific surface of particles, the authors prefer the gas adsorption methods for accuracy, chiefly because it penetrates into even the smallest surface pores, and can thus avoid the large error occurring in microscopical measurements.

Structure of Copolymers

To *Industries des Plastiques Modernes* for November 1960, H. Benoit and M. Leng (of the Centre de Recherche sur les Macromolecules, Strasbourg) contribute a paper on 'Determination of the Structure of Copolymers by Light Diffusion'. Measuring by light diffusion the molecular mass of a copolymer in solvents of different indices, it is possible to determine the molecular weights corresponding to the different types of monomers and also to obtain a parameter characterizing the heterogeneity of the material. A parallel study by rotation gives information on the structure of copolymers, allowing distinction to be made between block and random copolymers and also mixtures of homopolymers. By comparing experimental values obtained by this means with the theoretical, the model structure deduced from the kinetics of polymerization has been confirmed.

Turbidimetric titration has enabled H. Grohn and Hoang Huu-Binh to investigate the molecular weight distribution of polyvinyl chloride. They report the

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **F. C. JENNINGS**

results in *Plaste und Kautschuk* for February 1961 on pages 63-66.

Turbidimetric Titration Method

Because of the large variation in molecular weight in most samples of high polymers, the different methods of determining the molecular weight, such as viscometric, osmometric, light scattering, and sedimentation, yield not only approximately mean values but also differing values. Some of these methods also take a long time. The authors say that the turbidimetric titration method of Morey and Tamblyn, published in the *Journal of Applied Physics* in 1945, is the most elegant. They give results and molecular weight distribution curves from their investigations on a sample of a commercial pvc and on six fractions separated from another pvc, using this method, which they show to be accurate, to need only a small sample, and to be reasonably speedy.

Measuring Uniformity of Mixing

A somewhat related optical technique is described by R. M. Eichorn in *I/EC* for January 1961, Vol. 53, No. 1, pp. 67-70, under the title: 'An Optical Method for Measuring Uniformity in Plastics'.

'A specimen in the form of a film or thin plaque is mounted on a microdensitometer so that a finely focused light beam passes through it. The specimen is then scanned by moving it in a direction normal to the light path. This motion is equivalent to that of a flying spot scanner. Thus variation in absorbance modulates the intensity of the transmitted beam. This varying light signal is converted to a voltage signal by a photomultiplier tube. Fed into an electronic circuit, the uniformity computer, the voltage variation is analysed into alternating current and direct current components which are used to compute a statistical uniformity index'.

Naturally, differences between poor and good mixing can be seen at once on simple inspection of a recorded curve of the variation in light transmission from point to point of the scanned area. Such curves can be easily converted into Gaussian distribution curves which can, of course, be uniquely described by their means and standard deviations. Therefore the standard deviation of light intensity values may be defined as a statistical uniformity index, and is sufficient to characterize the physical variation pattern.

Effect of Particle Dispersion

The material on which most of the work here generalized seems to have been based is a polythene/carbon black mixture which gave rise to the interesting discussion which concludes the paper. 'When particulate solids, pigments, or carbon black, are mixed into a molten plastic, the effect of particle dispersion is at least as important as the evenness of mixing. If the particles of one component are agglomerated into clumps, that component is not utilized efficiently regardless of how well mixed. Good mixing can be accompanied by either good or poor dispersion and good dispersion can exist in a uniform or non-uniform mixture'.

The useful service life of a material such as polythene/carbon black which is used as an outdoor protective coating depends directly on the degree of uniformity of mixing, but exactly the same kind of problem arises in many other industries, notably the firing mixtures used for ordnance devices. Recently this has led to intensive study of mixing methods and some of the results are of great interest to the rubber and plastics industry.

Agglomerate Mixing

It is claimed that the agglomerate mixing method is well suited for producing intimate and reproducible mixtures of fine particles. 'If small portions of the mixture, averaging about 50 microns in size, must be identical, the majority of the component particles must be below 5 or 10 microns in diameter', says a paper by Comyn, Marcus, and McIntyre, in *I/EC*, Vol. 52, No. 12, for December 1960, pp. 995-8. 'Also, the mixing force must be sufficient to separate these particles and mix them together. However, there is another requirement that is not always obvious: the component particles must not move in relation to their immediate neighbours, once the blending is complete'.

The several investigations summarized in this paper resulted in demonstrating the importance of the surface layer of the particles and especially the zeta potential, 'a high zeta potential, caused by the absorption of ions on the particle surfaces, prevented the agglomeration of mineral particles'. Surface active agents and pH are clearly important factors.

When is a Manager?

When I write my Handbook for Executives, there will be a few words addressed to young technologists aspiring to become managers. On that journey, it will point out, there is a special pitfall for the scientifically-trained, the pitfall of money. The technologist has to learn that there is nothing wrong or dirty in evaluating things and operations in terms of money. This very point is well made by the editorial in *I/EC* for December 1960, p. 973.

'When a technical man realizes that his company is in business not to make isodiagonal acid or dimethyl dogbone, but to make money, and that whatever he does or does not do, and the way he performs, affects that object, then he has made the managerial grade'.

Measuring Hunches

Until the scientist has found a better LCM than LSD for evaluating and equating widely different processes and products, the manager must strive to convert suggestions, improvements, developments, ideas into money in order to be able to take a decision upon them. This is not a plea for an unscientific approach, on the contrary it asks that guessing should be eliminated, that hunches should be measured, and alternatives submitted to the rigours of analysis.

Of course, there is more to it than mere cash calculations. The basic techniques are the same, however, even to the extent of applying modern statistical techniques, such as stochastic analysis, and modern industry needs managers of this calibre. But this theme must wait for another week.

CHARLES JENNINGS.

MEN and MATTERS

A Review of People and Events

by Peter Richards

LAMINATED foam fabrics — or foambacks as they have become known in the 'rag' trade — are still very much in the news. Two executives of Kay Brothers Plastics Ltd. flew to New York last week to see the latest developments in this field. Kay has already developed a grade of expanded polyurethane for foambacks. (See this column, March 18).

John Webb, a director of the firm, and Dr D. F. Rushman, chief chemist, are making a ten-day fact-finding trip because of the 'tremendous response we have had from the textile industry since we announced our new grade of "Foamoprene" polyurethane for foambacks'.

The new process is likely to revolutionize the clothing industry because thin fabrics can be made warmer than woollens with practically no addition to their weight. Foambacks are warmer than any synthetic fibres and ounce-for-ounce are claimed to be 79% warmer than wool.

Dunlop Society of Authors

Dunlop might almost form its own society of authors, since seven members of the central research division of the company have recently been busy in the preparation of three new books.

C. H. Leigh-Dugmore, who is manager, basic research, in the compounding research department, has written the 'Microscopy of Rubber', published by the Institution of the Rubber Industry. D. W. Huke, of the spectroscopy section of the chemical research department, is the author of an 'Introduction to Natural and Synthetic Rubbers', published by Hutchinson, which is a really excellent introduction to the subject.

The comprehensive textbook on rubber technology 'The Applied Science of Rubber', edited by Dr W. J. S. Naunton, has six Dunlop contributors: A. F. Blanchard, W. A. Gurney, C. H. Leigh-Dugmore, E. W. Madge and F. C. J. Poulton, all of the central research division and R. N. Thompson of the development division.

Charles Jennings reviews Mr Leigh-Dugmore's book on page 506 of this issue, while a review of 'The Applied Science of Rubber' appears on page 512. A review of Mr Huke's book will appear in a later issue.

BICC Scottish Region Appointment

British Insulated Callender's Cables Ltd. has appointed V. J. Ross assistant regional manager, Scotland. Mr Ross was formerly sales manager for Scotland of Scottish Cables Ltd., Renfrew, a wholly-owned subsidiary of BICC.

Educated at Grantown Grammar School and Heriot-Watt College, Edinburgh, Mr Ross joined Scottish Cables after war service in the Electrical and Torpedo Branch of the Royal Navy.

He will work from the BICC Scottish regional office in Glasgow.

Industrial Officer for Plastics

The Council of Industrial Design has appointed V. O. Edwards as its industrial liaison officer for plastics, and some other items. The plastics category includes hollowware, fancy goods, vacuum flasks, fabrics, tiles and laminates. Previously, responsibility for Mr Edwards' range of products had been shared between three industrial officers. For the last six-and-a-half years, Mr Edwards has been assistant sales manager and Press officer with Arlington Plastics Development Ltd.

Dial Distillers

A new recording telephone answering system, enabling messages to be accepted outside normal working hours, has now been installed by British Geon Ltd., British Resin Products Ltd. and Distrene Ltd. at their London offices.

Knowing what odd messages have been left for the classified departments on a London evening paper using this system, I wonder what sort of requests Distillers are finding on the tape. But it is an excellent idea and the telephone number, by the way, is Hyde Park 0151.

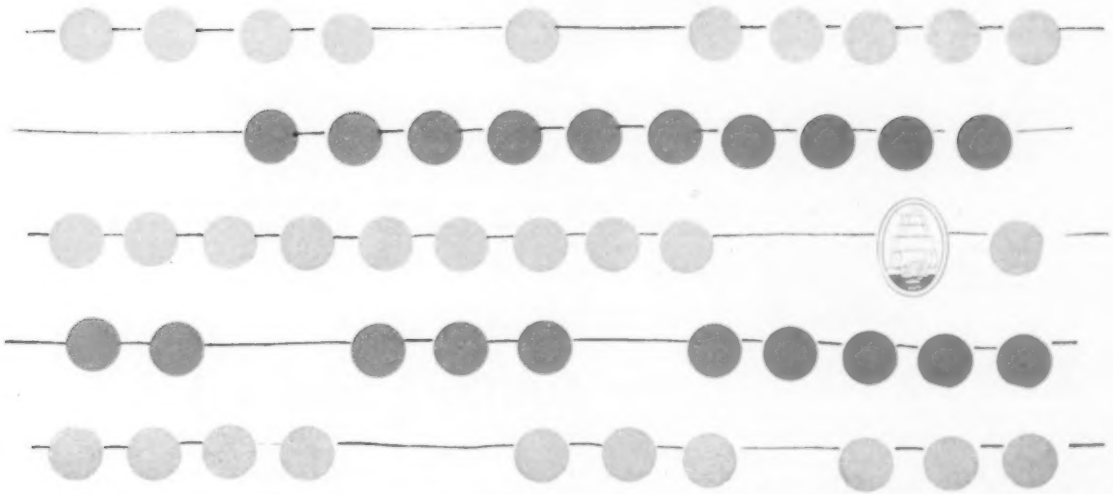
Plastics on Ice

An ice-hockey player can wear out 20 sticks in a 30-week season — consequently the outcome of an experiment being made by a Southampton ice hockey team is being watched with interest by people in the ice-hockey world.

Sticks are being used which have been sheathed by the Cascover process. This utilizes nylon cloth, resorcinol resin glue and a vinyl resin finish. It was originally developed by Leicester, Lovell and

North British Rubber Co., manufacturers in Great Britain of US Royal tyres, held a sales conference at Coventry recently in collaboration with Courtaulds, whose Tyrex cord is now used in all US Royal construction. In this group are W. E. Crook, general sales manager, tyre division; J. G. Smith, a director of Courtaulds; R. D. Hunt, deputy managing director; S. J. Hurst, industrial yarn sales, Courtaulds; and F. M. Roodhouse, tyre sales manager

beads you can count on...



Stearic acid—a ton at a time! . . . child's play to move and handle in the form of Stearex Beads. Packed by Price's especially for the rubber industry in standard size non-returnable bags, a ton of Stearex Beads loaded on a pallet takes only seconds to offload and run into store.

And at no extra cost over other Stearic acid forms, Stearex Beads (made by Price's for Columbian International) offer these extra advantages:—

FREE FLOWING—ideal for handling by manual or pneumatic methods

NO DUSTING—does not dust in the same way as powder

NO CAKING—less liable to cake on storage

CONSTANT WEIGHT/VOLUME RATIO—makes for easier measuring

Stearex Beads have Price's name for quality and reliability behind them.

COLUMBIAN INTERNATIONAL (Great Britain) LTD

116 CANNON STREET, LONDON, E.C.4. Telephone MANsion House 5277 (PBE) Telegrams NOIRCEUR LONDON

Sole selling agents to the rubber industry for

PRICE'S (Bromborough) LTD Bromborough Pool, New Ferry, near Birkenhead

PB 87 8056-120

Co. Ltd. to give wooden boat hulls protection against impact damage, general wear, and at the same time to reduce maintenance work.

The sheathing of sticks in this way is considered an ideal application, since the material's ability to withstand impact damage and abrasion is coupled with the ability of the sheathing materials to move in unison with the wood. It also seems as if the sticks are bonded with a winning streak. They were used for the first time by the Southampton Vikings in a recent match against Murrayfield Royals, which the Vikings won by seven goals to six.

Michael P. Renaud is the new European sales manager for U.S.I. International, the European sales and service affiliate of U. S. Industrial Chemicals Co. based at Zug, Switzerland. He succeeds K. E. Cosslett

Blue Peter Cup Goes to Midlands

About 100 guests, representing distributors and traders were recently entertained in Northampton by Blue Peter Retreads Ltd. The occasion marked the presentation of the 'Blue Peter' sales cup to the Northampton Depot of Birmingham Motor Tyres Ltd., who, as winners for the 1960 trading year, had competed with distributors throughout the UK for the cup.

H. R. J. De Keyser, general sales manager of Blue Peter Retreads Ltd., accompanied by the Midland manager, B. H. T. Rowley, made the presentation and C. Drummond, director, received the cup on behalf of Birmingham Motor Tyres Ltd.

North British Rubber has appointed A. F. Rose field sales engineer, wire braid hose. He succeeds T. S. Martin, who has joined Stratoflex (UK) Ltd.

Appointments in Brief

G. W. Hill, New York manager of B. F. Goodrich International Co. since September, has been appointed general sales manager for the division with headquarters in Akron, where he will be responsible for distribution and trade sales of all company products throughout the world.

* * *

William Reid will retire from executive duties with the Distillers Co. Ltd. on March 31. He will be succeeded as chairman of the management committee by T. F. A. Board. H. H. Woolveridge has been appointed as a member of this committee.

* * *

C. T. Cathro has been appointed assistant general manager of United Ebonite and Lorival Ltd. and has been elected to the board. K. R. Dodd and F. E. Lowe have also been appointed directors of the company.

* * *

Frank Keatley has been appointed sales manager of Bank Bridge Rubber Co. Ltd., of Clayton, Manchester.

* * *

F. H. Puxty and F. E. Winstanley have been appointed directors of Greengate and Irwell Rubber Co.

Polly Ester Says . . .

'Oxalate — so maybe Cambridge will win'

THE LEGAL ANGLE

Bluffing into a Job

By a Barrister

'Rubber chemist/technologist required . . . applications invited from chemists with experience in compounding, process control and development'. — RPW February 18 1961.

Not an unusual advertisement: a man required with experience and knowledge of the rubber industry. But suppose that a person applies for the job and gets it, on the basis of an interview and a reference, and he turns out not to have the knowledge or the experience necessary? Can you get rid of him summarily, even if no probationary period had been agreed? Or must you either keep him on for his period of notice or else pay him salary in lieu?

We know a man — let us call him Smith — who got himself a job with a rubber and plastics firm as a representative. He has a silver tongue, which got him through an interview with a managing director. True, the executive was desperate for someone to fill the position, but still, he was satisfied that Smith knew quite a lot about polymers.

In fact, Smith thought that pvc was a variety of underwear and latex a subject not discussed in polite company. In short, so far as plastics and rubber were concerned, he knew nothing at all.

Bluff carried him happily along for a few weeks, and then the uncomfortable truth leaked out. He got the sack — summarily.

Needless to say, he was with his lawyer within a half-hour.

'Sorry, Smith', he was told, 'but this time you're out of luck. There's a term implied in every contract of service entered into by an employee that he will be sufficiently qualified or equipped to carry out the work with reasonable skill. In a leading case, a man got a job as a housepainter when he had not the slightest idea how to wield a paint brush. His boss was held entitled to dismiss him summarily. No notice, no wages in lieu, nothing. . . .'

'And the same applies to me?' Smith queried.

'If you have not enough knowledge of the rubber and plastics trade to enable you to sell your employer's goods, you are useless to him. You acquired your job because you held yourself out as having the necessary experience and knowledge when this was untrue. So your employers are completely within their rights in dismissing you forthwith'.

Which goes to show that employers are not always wrong, after all.

Correspondence

Foam Production in UK

Sir,

It is certainly most impressive to see that in USA in 1960 the flexible foam production amounted to 1.1m. cu. ft. of vinyl foam, 36m. cu. ft. of latex foam, and 47m. cu. ft. of urethane foam (American Letter, *RPW* March 18).

Directly comparable figures for the UK are not available, but I thought your readers might be interested to have some information as to a parallel trend towards greater flexible urethane foam utilization which, however, can only be estimated somewhat indirectly.

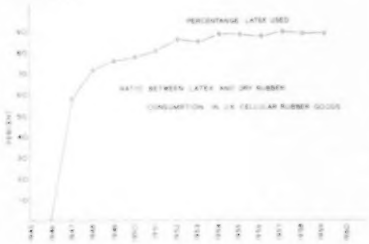


Fig. 1

Most readers will know that the Rubber Study Group published, until the end of 1959, some useful statistics on UK cellular rubber consumption which were always a useful guide as to trends. I have extracted some of this information, which has not previously been published in this condensed form.

Fig. 1 shows the ratio between latex and dry rubber consumption in the UK cellular rubber goods, and the sweeping advantage that rubber

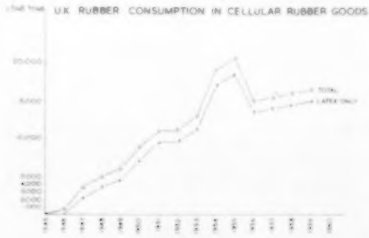


Fig. 2

latex has held for many years. Fig. 2 indicates that the annual rubber consumption since 1945 has shown a steady upward trend until 1955, which coincides with the year when flexible urethane foams were first imported and manufactured in the UK. The following year the position recovered a little and there seems a steady but slow upward trend.

It is estimated that last year flexible polyurethane foam ultilization amounted to over 20,000 tons, which would be approximately 30% more than latex foam production. These figures show that the same ratio between latex foam and urethane foam which is found in the USA is also to be found in the UK.

It would be interesting to make a further study of the impact of plastics on rubber in the flexible foam field, but unfortunately no further figures, on UK rubber consumption in cellular rubber goods, are for the present to be published by the Secretariat of the Rubber Study Group.

A. COOPER,
Technical Director,
Expanded Rubber Co. Ltd.

Engelke Equipment in Rubber Reclaiming

Sir,

As representatives in this country of Conrad Engelke of Hanover, we have noted with interest the article on page 420 of your issue dated March 18 1961 (Rubber Reclaiming Processes). In this, you refer to 'The Engelke Process'.

Actually, Engelke supply equipment for various processes of reclaiming. The high pressure saturated steam process, described in your article, is their particular speciality, and as you say, is the most rapid used in this country today.

However, we should like to point out to you that the pressure required is not as high as mentioned in your article, the usual working pressure being about 570 psi, equivalent to about 480°F., the steam being generated at about 640psi.

Yours very truly,
ALFRED A. RYNER.
Director.
International Corporation Ltd.

IRI Golf

Full Attendance at Manchester Dinner

THE fifth annual dinner of the Manchester Section of the Institution of the Rubber Industry Golfing Society was held at the Grand Hotel, Manchester, recently.

Among the 85 members and guests were L. A. Macqueen, the present holder of the Wallwork Cup, from the London section, and Tom Davie, the captain, and John Gallie, secretary of the Scottish section. The captain of the Manchester section, S. Heywood, took the chair.

The vice-chairman of the Manchester section of the IRI, Ernest Morris, said that the golfing society now had a membership of some 200 members, the Manchester section having the largest by far — 99 members.

He went on to say how the society had flourished and had been built up around the Wallwork Cup, which was competed for annually by the three sections, the Wallwork Cup having first been presented to the society by Colonel James Wallwork in 1922. Mr Heywood responded on behalf of the Manchester section.

Frank Savaage proposed the toast of the guests and Tom Davie, the Scottish captain, replying, welcomed all the members to Gleneagles in June for the weekend inter-section Matches and the competition for the Wallwork Cup.

Some of the members and guests just before the dinner. The Manchester section has the largest membership in the IRI Golfing Society

BOOK REVIEW

Applied Science of Rubber

ATTEMPT AT WIDE SCOPE ONLY PARTLY SUCCESSFUL

RECENT years have seen the publication in France and in Germany of two excellent works on rubber and the rubber industry. Germany has produced the Kautschuk-Handbuch and France the Encyclopedie Technologique de l'Industrie du Caoutchouc.

It is now therefore pleasing to welcome a British book of high quality and wide scope consisting, unlike its French and German counterparts, of a single volume. There are also some differences of treatment or emphasis for in The Applied Science of Rubber,* an attempt — not always successful — has been made to relate theory to practice.

The book has been prepared with the approval of the Institution of the Rubber Industry and is edited by W. J. S. Naunton, who for many years, prior to his retirement, was chief of the I.C.I. Rubber Service Laboratories. During his tenure of office, which will be long remembered, Dr Naunton acquired a reputation for being able to collect around him a first-class team to undertake any project and the list of contributors to the prevent volume shows that he has not lost this art. Unfortunately there is no single list of chapters with names and qualifications of the authors — to secure this information the reader has to look in three separate places.

With such a wealth of talent, it is difficult to single out sections for special praise but a few may be mentioned.

Based on Experience

F. J. C. Poulton's contribution on analysis which occupies 118 pages is up-to-date, comprehensive and contains information based on the author's experience, and hence not to be found elsewhere. In the same way A. J. Hirst's account of the applications of dynamic properties (124 pages) is especially welcome. A. F. Blanchard's discussion of the theory of processing is a fitting prelude to C. H. Leigh-Dugmore's description of its practice, so that Chapter VII provides a happy example of the principles on which the book has been designed. Other chapters are less satisfactory in this respect, for instance Chapter V, where Dr J. R. Scott's 47-page theoretical section dealing with mixing, extruding, calendering and other operations, is followed by a practical section in which M. M. Heywood deals with the whole of his subject in a mere 13 pages.

The book has, in effect, been reviewed by Dr Naunton in a short but well-written foreword from which it is worth while to quote. He says: '. . . the question then arose whether the rubber industry would allow their experts to contribute frankly and without restraint. . . . In no case was an invited contributor refused permission. . . .'

This indeed is a refreshing change from the old days of secrecy but the extent to which specialized knowledge is imparted to the reader is extremely variable. For example, the contributions by J. M. Buist on physical testing of rubber and on practical ageing, give valuable information in great detail; so, too, does the chapter by R. N. Thomson and W. A. Gurney on the testing of finished products. On the other hand, manufacture from latex is described only in the most general terms and although useful information is not lacking, the chapter is devoid of any quantitative data and contains very few references.

Applying the Knife

To quote again from the foreword, '. . . the editor has been compelled to cut down some manuscripts. . . .' This, alas, is all too apparent. Possibly through modesty the editor seems to have applied the knife to his own contributions which, having regard to the importance of the subject, are consequently amongst the least satisfactory. Dr Naunton's account of the manufacture of synthetic rubbers is meagre in the extreme — how could it be otherwise in a mere 24 pages? A typical example is that of neoprene, the manufacture of which is described in three lines. About two pages of this section are devoted to non-vulcanizable thermoplastics. Here, the author's remarks, under 'Vulcanization of Plastics', on the relative properties of what he calls vulcanized and unvulcanized pvc mine belts, will puzzle not only the student but the experienced worker also.

The worst example of the way authors' manuscripts have been cut down is to be found on page 168. Here, a picture of the bowl of a latex centrifuge occupying half a page, suddenly appears without any kind of textural reference, an inexcusable piece of bad editing or proof correction, but from which it would seem that an account by G. Martin of latex concentration has been ruthlessly rather than skilfully excised.

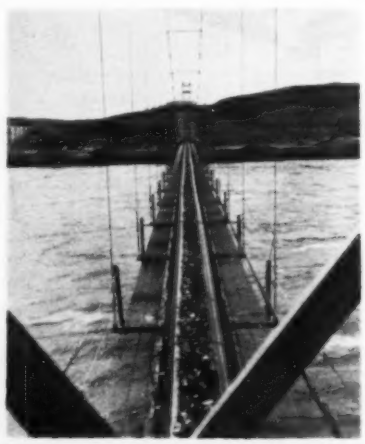
It is clear that with the vast amount of knowledge available, anyone responsible for a comprehensive treatise must have great difficulty in deciding what to print and what to exclude, and it would be pointless to criticise without suggesting ways of making room for the deleted sections — and possibly other matter — without adding still further to the bulk of a volume already 2¼in. thick and weighing nearly 5lb. The answer again is to be found in the Foreword, '. . . it is impossible to eliminate repetition completely but an attempt has been made to reduce it to a minimum'. Could the attempt have been more serious? Cyclized rubber is dealt with three times, at pages 90, 195 and 501, and in almost identical terms; so too are latex graft polymers, at pages 140, 193 and 503. These examples and the comparatively excessive length of some sections point to the way in which the scope of the book could have been widened.

Lack of Illustrations

A special word is due on the choice of illustrations. L. R. Mernagh, in his account of practical vulcanization, would have been greatly helped in his efforts to describe moulding defects, such as 'back rinding', by suitable illustrations, but these are lacking. Similarly, Mr Heywood has been given the task of telling readers how an extruder operates without the help of a single diagram. Space for illustrations on such essential matters could have been found by deleting the pictures of the outside of chemical plant which can convey little to the reader, and by reducing the size of some other illustrations.

The subject index is woefully inadequate but perhaps it is not intended that the book should serve as a work of reference. The illustrations are good, the printing and binding excellent and the number of misprints not excessive; nor is the price, taking into consideration what the purchaser receives. Many of the chapters are so good that the book is worth buying even by those whose interests are confined to a single subject.

H. J. S.

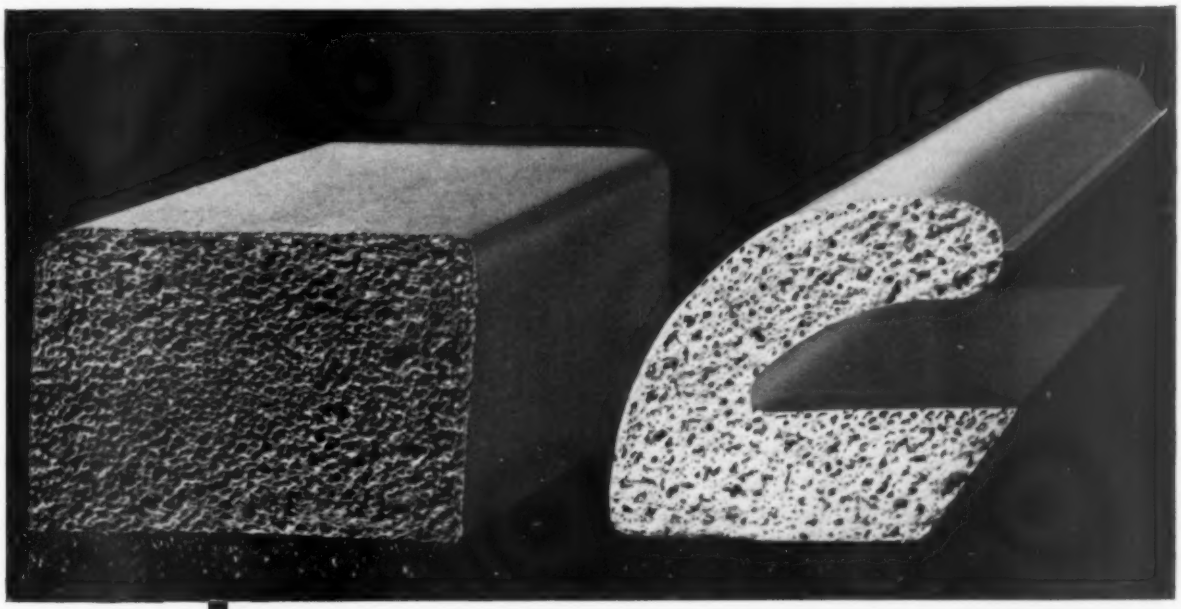


Aggregate for concrete that will go into the Ice Harbour Dam on the Snake river in Pascoe, Washington, is transported across the water by a 30in. B. F. Goodrich conveyor belt tramway, which is claimed to move at 300ft. per min.

* 'The Applied Science of Rubber'. Edited by W. J. S. Naunton. (Published by Edward Arnold (Publishers) Ltd., 1,191 pp. Price £8 8s.

Copies may be ordered through the Books Department, RUBBER AND PLASTICS WEEKLY, Maclaren House, 131 Great Suffolk Street, London, S.E.1.

'BUTAKON' AC5502
for sponge profiles



'Butakon' butadiene copolymer compound AC5502 has properties which make it an attractive material for the manufacture of sponge profiles.

These properties are :—

OUTSTANDING OIL RESISTANCE
OUTSTANDING OZONE RESISTANCE
EXCELLENT WEATHERING PROPERTIES
EASILY PIGMENTED TO GIVE BRIGHT COLOURS, INCLUDING PASTEL SHADES

Appropriately formulated, sponge profiles based on 'Butakon' AC5502 exhibit good pore structure and a uniform skin. The weather resisting properties of the compounds mean that an applied or live skin is unnecessary. Examples of sponge profiles are shown in the illustration.

Further information on this and other uses of 'Butakon' compound AC5502 is available from Imperial Chemical Industries.

'Butakon'

'Butakon' is the registered trade mark for the butadiene copolymers manufactured by I.C.I.

ICI

PB54

IMPERIAL CHEMICAL INDUSTRIES LIMITED · LONDON · S.W.1

BOOK REVIEW

Applied Science of Rubber

ATTEMPT AT WIDE SCOPE ONLY PARTLY SUCCESSFUL

RECENT years have seen the publication in France and in Germany of two excellent works on rubber and the rubber industry. Germany has produced the Kautschuk-Handbuch and France the Encyclopedie Technologique de l'Industrie du Caoutchouc.

It is now therefore pleasing to welcome a British book of high quality and wide scope consisting, unlike its French and German counterparts, of a single volume. There are also some differences of treatment or emphasis for in The Applied Science of Rubber,* an attempt — not always successful — has been made to relate theory to practice.

The book has been prepared with the approval of the Institution of the Rubber Industry and is edited by W. J. S. Naunton, who for many years, prior to his retirement, was chief of the I.C.I. Rubber Service Laboratories. During his tenure of office, which will be long remembered, Dr Naunton acquired a reputation for being able to collect around him a first-class team to undertake any project and the list of contributors to the prevent volume shows that he has not lost this art. Unfortunately there is no single list of chapters with names and qualifications of the authors — to secure this information the reader has to look in three separate places.

With such a wealth of talent, it is difficult to single out sections for special praise but a few may be mentioned.

Based on Experience

F. J. C. Poulton's contribution on analysis which occupies 118 pages is up-to-date, comprehensive and contains information based on the author's experience, and hence not to be found elsewhere. In the same way A. J. Hirst's account of the applications of dynamic properties (124 pages) is especially welcome. A. F. Blanchard's discussion of the theory of processing is a fitting prelude to C. H. Leigh-Dugmore's description of its practice, so that Chapter VII provides a happy example of the principles on which the book has been designed. Other chapters are less satisfactory in this respect, for instance Chapter V, where Dr J. R. Scott's 47-page theoretical section dealing with mixing, extruding, calendering and other operations, is followed by a practical section in which M. M. Heywood deals with the whole of his subject in a mere 13 pages.

The book has, in effect, been reviewed by Dr Naunton in a short but well-written foreword from which it is worth while to quote. He says: '. . . the question then arose whether the rubber industry would allow their experts to contribute frankly and without restraint. . . . In no case was an invited contributor refused permission. . . .'

This indeed is a refreshing change from the old days of secrecy but the extent to which specialized knowledge is imparted to the reader is extremely variable. For example, the contributions by J. M. Buist on physical testing of rubber and on practical ageing, give valuable information in great detail; so, too, does the chapter by R. N. Thomson and W. A. Gurney on the testing of finished products. On the other hand, manufacture from latex is described only in the most general terms and although useful information is not lacking, the chapter is devoid of any quantitative data and contains very few references.

Applying the Knife

To quote again from the foreword, '. . . the editor has been compelled to cut down some manuscripts. . . .' This, alas, is all too apparent. Possibly through modesty the editor seems to have applied the knife to his own contributions which, having regard to the importance of the subject, are consequently amongst the least satisfactory. Dr Naunton's account of the manufacture of synthetic rubbers is meagre in the extreme — how could it be otherwise in a mere 24 pages? A typical example is that of neoprene, the manufacture of which is described in three lines. About two pages of this section are devoted to non-vulcanizable thermoplastics. Here, the author's remarks, under 'Vulcanization of Plastics', on the relative properties of what he calls vulcanized and unvulcanized pvc mine belts, will puzzle not only the student but the experienced worker also.

The worst example of the way authors' manuscripts have been cut down is to be found on page 168. Here, a picture of the bowl of a latex centrifuge occupying half a page, suddenly appears without any kind of textural reference, an inexcusable piece of bad editing or proof correction, but from which it would seem that an account by G. Martin of latex concentration has been ruthlessly rather than skilfully excised.

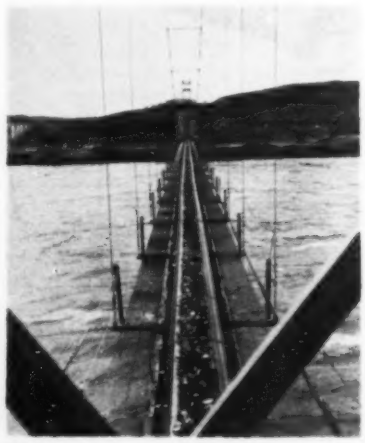
It is clear that with the vast amount of knowledge available, anyone responsible for a comprehensive treatise must have great difficulty in deciding what to print and what to exclude, and it would be pointless to criticise without suggesting ways of making room for the deleted sections — and possibly other matter — without adding still further to the bulk of a volume already 2¼in. thick and weighing nearly 5lb. The answer again is to be found in the Foreword, '. . . it is impossible to eliminate repetition completely but an attempt has been made to reduce it to a minimum'. Could the attempt have been more serious? Cyclized rubber is dealt with three times, at pages 90, 195 and 501, and in almost identical terms; so too are latex graft polymers, at pages 140, 193 and 503. These examples and the comparatively excessive length of some sections point to the way in which the scope of the book could have been widened.

Lack of Illustrations

A special word is due on the choice of illustrations. L. R. Mernagh, in his account of practical vulcanization, would have been greatly helped in his efforts to describe moulding defects, such as 'back rinding', by suitable illustrations, but these are lacking. Similarly, Mr Heywood has been given the task of telling readers how an extruder operates without the help of a single diagram. Space for illustrations on such essential matters could have been found by deleting the pictures of the outside of chemical plant which can convey little to the reader, and by reducing the size of some other illustrations.

The subject index is woefully inadequate but perhaps it is not intended that the book should serve as a work of reference. The illustrations are good, the printing and binding excellent and the number of misprints not excessive; nor is the price, taking into consideration what the purchaser receives. Many of the chapters are so good that the book is worth buying even by those whose interests are confined to a single subject.

H. J. S.

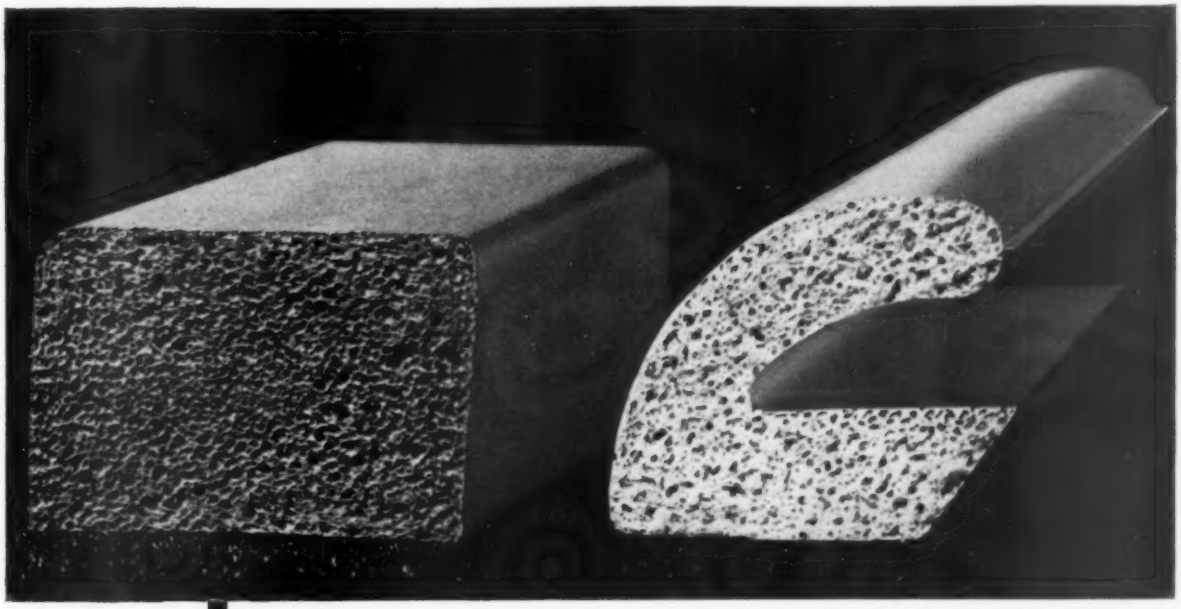


Aggregate for concrete that will go into the Ice Harbour Dam on the Snake river in Pascoe, Washington, is transported across the water by a 30in. B. F. Goodrich conveyor belt tramway, which is claimed to move at 300ft. per min.

* 'The Applied Science of Rubber'. Edited by W. J. S. Naunton. (Published by Edward Arnold (Publishers) Ltd., 1,191 pp. Price £8 8s.

Copies may be ordered through the Books Department, RUBBER AND PLASTICS WEEKLY, Maclaren House, 131 Great Suffolk Street, London, S.E.1.

'BUTAKON' AC5502
for sponge profiles



'Butakon' butadiene copolymer compound AC5502 has properties which make it an attractive material for the manufacture of sponge profiles.

These properties are :—

OUTSTANDING OIL RESISTANCE
OUTSTANDING OZONE RESISTANCE
EXCELLENT WEATHERING PROPERTIES
EASILY PIGMENTED TO GIVE BRIGHT COLOURS, INCLUDING PASTEL SHADES

Appropriately formulated, sponge profiles based on 'Butakon' AC5502 exhibit good pore structure and a uniform skin. The weather resisting properties of the compounds mean that an applied or live skin is unnecessary. Examples of sponge profiles are shown in the illustration.

Further information on this and other uses of 'Butakon' compound AC5502 is available from Imperial Chemical Industries.

'Butakon'

'Butakon' is the registered trade mark for the butadiene copolymers manufactured by I.C.I.

ICI

PB54

IMPERIAL CHEMICAL INDUSTRIES LIMITED · LONDON · S.W.1

Plastics Statistics

FEBRUARY EXPORTS AND IMPORTS

PLASTICS exports during February 1961 slipped back a little from the January 1961 total of 18,409 tons (value £4,317,988) to 16,028 tons (£3,625,198). This was, however, an increase of over 2,000 tons on the February 1960 figure of 13,940 tons (£3,481,664). These figures are given in the official Trade and Navigation accounts.

Imports during the month were 5,440 tons valued at £2,029,954, compared with 6,154 (£1,893,159) in February 1960. USA continued to be the major supplier with 1,345 tons, followed by Western Germany with 1,123 tons. Canada supplied 785 tons. Imports for the first two months of this year stand at 12,289 tons (£4,423,020): slightly less than the imports for the same period last year, which stood at 13,672 tons.

Exports for the year so far add up to 34,460 tons (£7,946,971, compared with 28,466 tons (£7,355,689) in the first two months of 1960.

Details of imports of plastics materials during February 1961:

	Tons	£
Acrylics	279	94,120
Alkyd solid and liquid resins, solutions, emulsions and dispersions	191	36,703
Cellulose plastics:		
Acetate butyrate	103	85,908
Photographic (including cinematograph) film base (except acetate butyrate)	151	196,363
All other	110	87,969
Polyamides	462	297,314
Polystyrene	338	78,676
Polyvinyl chloride:		
Polymers and copolymers	1,174	194,735
All other	442	153,400
All other	2,190	804,766
Total	5,440	2,029,954

Exports of plastics materials during February 1961:

	Tons	£
Acrylic sheet, rod, tube, film, foil and profile shapes in primary form	763	424,761
Alkyd solid and liquid resins, solutions, emulsions and dispersions	495	96,830
Aminoplastics:		
Solid and liquid resins, including solutions	881	115,870
Moulding and extrusion compounds	671	125,491
Cellulose plastics:		
Moulding and extrusion compounds	180	59,751
Sheet, rod, tube, film (excluding regenerated cellulose), foil and profile shapes in primary form	168	106,537
Phenolics and cresylics:		
Solid and liquid resins (straight and modified)	583	110,732
Other	580	212,995
Polystyrene	1,422	261,782
Polythene (polyethylene) sheet, rod, tube, film, foil and profile shapes in primary form	149	41,066
Polyvinyl chloride:		
Polymers and copolymers	2,344	333,410
Moulding and extrusion compounds	1,187	244,862
Sheet	686	268,663
Other	113	32,042
All other	4,787	1,090,450
Waste and scrap (including celluloid and film waste and scrap)	1,019	99,956
Total	16,028	3,625,198

UK exports to countries in the European Economic Community (Common Market) and the European Free Trade Association are shown below.

EXPORTS TO EEC

	Feb. 1960	Feb. 1961
Western Germany	653	414
Netherlands	521	637
Belgium	493	837
France	299	665
Italy	1,340	604
	3,306	3,157

EXPORTS TO EFTA

	Feb. 1960	Feb. 1961
Sweden	754	955
Norway	342	450
Denmark	486	640
Switzerland	264	288
Portugal	312	341
Austria	122	182
	2,280	2,856

(Any apparent discrepancies are due to rounding off of figures)

Exports to Commonwealth countries during the month were 4,558 tons (4,759 in February 1960) and exports to all other foreign countries were 5,457 tons (3,589 tons).

Rubber Statistics

FRANCE — NIGERIA — USA — S. CAMEROONS — MALAYA

THE French Ministry of Industry and Commerce has issued the following rubber statistics for November, December and January (in tons):

	Dec.	Nov.
CONSUMPTION		
Natural rubber	10,292	10,308
Latex	1,052	1,140
Synthetic	8,797	8,398
	20,141	19,846
ENTRY INTO PLANTS		
Natural rubber	10,167	9,968
Latex	1,185	1,056
Synthetic	9,411	7,687
	20,763	18,711
STOCKS AT END OF MONTH		
Natural rubber	16,243	*16,368
Latex	1,774	1,641
Synthetic	13,444	12,830
	31,461	30,839

* Revised

TYRE PRODUCTION	January	December
Production	21,650	23,940
Imports	not issued	745
Exports	not issued	5,037
INDUSTRIAL RUBBER PRODUCTION	18,780	19,490

Nigeria

Rubber exports for October 1960 totalled 1,883 tons, of which the UK took 818 tons, West Germany 622 tons, the US 125 tons, Czechoslovakia 96 tons, the Netherlands 12 tons, Belgium-Luxembourg 10, and other countries 200 tons.

Crepe exports amounted to 1,159 tons of which 715 tons went to the UK, 250 tons to USA, and 194 tons to other countries.

USA

Imports of natural rubber in January totalled 28,990 tons, compared with 35,691 tons in December, and imports of latex were 4,761 tons, compared with 3,616 in December, according to the Department of Commerce in New York.

Southern Cameroons

In the Southern Cameroons the Cameroon Development Corporation rubber plantations are reported by Barclays Bank DCO to have produced 822,804lb. during January, compared with 748,103lb. in January 1960.

Malaya

February rubber shipments of sheet and crepe from Malaya totalled 77,196 tons.

The total comprised: UK 13,729 tons, USA 6,218 tons, West Germany 5,885 tons, Japan 7,628 tons, Russia 10,000 tons, Europe 20,045 tons, Commonwealth countries 6,535 tons, other countries 7,156 tons.

Latex and revertex shipments were 6,480 tons: UK 2,307 tons, USA 528 tons, West Germany 1,005 tons, Japan 862 tons, Europe 858 tons, Commonwealth countries 477 tons, and other countries 443 tons.

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

SPOTLIGHTED . . . results from the country's biggest industrial combine, the mighty IMPERIAL CHEMICAL INDUSTRIES. Sales of this group were returned at £558m., an increase over last time of £49m. The fob value of exports from the UK came out at £96.6m. compared with £87.5m. Income after meeting a bigger depreciation bill, and after allowing for the employees' profit sharing scheme of £8.56m., amounted to £88.04m. against £73.12m. Net profits rose by a modest £6m. to £47.57m. And the dividend payment to shareholders was stepped up from 2s. 3d. to 2s. 9d., which was in line with an earlier forecast.

This story of millions, however, failed to cause even a minor ripple among other leading industrial shares quoted on the Stock Exchange Something of a surprise, for usually news from this boardroom has a profound effect on investment thinking as a rule. But the reaction — such as it was — that followed the announcement about trading results for 1960 showed that they were about in line with most expectations. There is no doubt in my mind that dealers along Throgmorton Street are awaiting the chairman's annual remarks about the outlook with more than usual interest.

Shock . . . from the REDFERN HOLDINGS group who reported a nasty setback. Profits the board disclosed have fallen from £56,700 to £15,000. Having resumed dividends last year with a payout of 6%, the company has now been forced to drop out of the list. Reason for this gloom was due apparently to national and international factors, in particular, the motor trade recession, the collapse in the price of rubber causing substantial writing down of stock values and an unusually large wage award which could not be immediately recouped.

Progress report . . . told shareholders of MARLEY TILE (HOLDING) that profits in the first quarter rose to £605,800 from £516,100. After fulfilling requirements for depreciation and the tax man, the net profit works out at £245,900 against £182,200.

Disappointment . . . from STOREY BROTHERS. News of a further advance in profits from the record level achieved last year was hoped for. Instead, it was reported that they were, in fact, 9% lower at £879,607 after adjusting the previous year's figures to allow for a 53-week period. After tax, net profits were £465,100 against an adjusted £495,000. Dividend stayed pegged at 30% with a final of 22½%.

Share Price Movements

Par Value	Company	1960-61 High	Low	Mar. 18	Latest
£1	A.E. Ind. Ord.	67/-	39/-	48/6	44/9
5/-	Albright & W. Ord.	34/3	25/-	28/6	27/9
£1	" " " 5% Pref.	17/3	14/3	14/3	14/3
5/-	Anchor Chemical Ord.	23/6	14/9	22/-	20/-
4/-	Airfix	50/-	23/-	48/-	49/9
4/-	" Non Voting	46/3	23/-	44/6	46/3
5/-	Andersons Rub. Ord.	—	—	3/9	3/9
£1	Angus Geo. Ord.	71/3	34/9	68/9	72/-
5/-	Ault & Wiborg Ord.	28/6	20/-	26/3	28/3
£1	Avon India Rubber Ord.	46/6	30/-	38/6	38/6
£1	" " " 6% Pref.	20/-	17/6	18/9	18/9
10/-	Bakelite Ord.	56/3	33/3	52/6	51/-
£1	" 6% Pref.	19/3	16/9	18/-	18/-
£1	Baker Perkins Ord.	53/-	39/1½	49/6	52/-
4/-	Bank Bdg. Rubber Ord.	4/3	1/9	3/3	3/3
4/-	Bettix	—	—	10/-	11/6
4/-	Brammer H. Ord.	18/6	16/3	17/-	16/9
10/-	Bridge, David Ord.	66/6	48/-	64/9	60/6
5/-	Bright, John Ord.	18/6	14/3	15/9	15/6
5/-	Brit. Blting & Asb. Ord.	19/9	17/-	19/9	19/9
£1	" " " " Pref.	—	—	15/9	15/9
5/-	British Electronic Indus.	15/-	12/-	13/9	14/1½
2/-	Brit. Ind. Plas. Ord.	14/3	5/3	13/6	14/-
2/-	" 10% (tax free) Pref.	4/9	4/3	4/9	4/9
£1	British Xylonite Ord.	93/-	50/6	91/3	90/-
£1	" " 5% Pref.	18/9	14/-	15/-	14/4½
£1	BICC Ord.	61/3	47/6	57/3	57/3
5/-	BTR Ind. Ord.	18/9	9/9	16/6	18/3
£1	" " 7½% Pref.	24/3	21/3	21/3	21/3
£1	Courtaulds Ord.	59/4½	42/-	42/9	40/7½
£1	" 5% 1st Pref.	17/9	14/9	15/3	14/9
£1	" 6% 2nd Pref.	21/-	17/7	17/6	17/6
4/-	Cow, P. B. Ord.	9/9	6/9	8/9	8/7½
£1	" " 5% Pref.	15/6	13/6	13/6	13/6
1/-	Dannimac Mfg. Ord.	14/6	9/-	12/9	14/3
10/-	De La Rue Ord.	78/6	47/9	62/6	60/9
£1	" " " 3½% Pref.	12/-	10/-	10/-	10/-
10/-	Distillers Co. Ord.	38/3	27/9	37/-	36/-
£1	" " 6% Pref.	22/-	19/6	20/-	19/6
£100	" 5% Conv. Loan	£96	£93½	£95	£95
£100	" 5½% Unsec. Loan	£97	£81	£81	£81
10/-	Dunlop Rubber Ord.	30/6	19/9	23/9	23/9
£1	" " 5½% Pref.	19/-	15/3	15/6	15/3
£100	" 3½% 1st Debs.	£78	£68	£68	£68
£100	" 4½% 2nd Debs.	£87	£77½	£78	£79
£1	Eng. Elect. Ord.	53/6	30/9	40/6	37/9
4/-	Ebonite Cont. Ord.	14/3	7/9	8/-	7/9
£1	English China Clays Ord.	103/3	69/-	96/-	100/9
£1	Goodyear Tyre 4% Pref.	12/9	10/6	11/-	11/3
5/-	Greeff Chem. Ord.	35/-	23/-	28/3	29/6
10/-	Greeff Chem. 5½% Pref.	9/-	7/9	7/9	7/9
4/-	Greengate & Irwell Ord.	6/6	5/3	6/-	5/9
5/-	Hackbridge Hldg.	8/7½	5/-	6/9	6/3
£1	Harrisons & Crosfield Dd.	64/-	48/6	52/9	55/-
1/-	Hunt & Moscrop Ord.	2/9	1/4½	2/3	2/1½
£1	Imp. Chem. Ord.	75/3	54/3	71/-	70/9
£1	" " 5% Pref.	18/-	15/-	15/6	15/3
£100	" 4½% Unsec. Loan	£89½	£78	£79	£80
£100	" 5½% Conv. Loan	£212½	£90xc	£90	£90
1/-	Kleemann (O. & M.) Ord.	18/6	8/3	17/4½	18/3
£1	" 6½% Pref.	19/-	16/6	16/3	16/3
5/-	Laporte Ind. Ord.	33/6	21/3	29/9	29/3
£1	" " 7½% Pref.	24/3	22/-	22/-	22/-
£1	Leyland & Birm. Rubber Ord.	63/-	46/3	49/-	53/9
£1	" " " 6% Pref.	19/-	17/6	18/1½	18/1½
2/-	London Rubber	20/3	11/-	17/-	19/9
£1	" 6% Red. Cum. Pref.	20/-	18/-	17/6	17/6
£1	McKechnie Bros. Ord.	71/6	53/6	54/6	55/-
£1	" " 'A' Ord.	69/3	52/6	53/-	54/6
£1	" " 6% Cum. Pref.	18/-	16/-	17/-	17/-
5/-	Monsanto Chem. Ord.	31/-	23/-	24/3	24/9
£1	" " 3½% Pref.	12/9	11/9	11/9	12/-
£100	" " 6% Debs.	£103½	£96	£97	£97
5/-	Miles (H.G.) Hldgs. Ord.	11/3	7/6	7/6	7/6
2/-	Movitex	—	—	6/9	6/6
£1	North British Rubber	21/3	14/-	15/-	14/-
5/-	Northwestern Rubber	13/-	9/-	12/-	12/-
5/-	Plastic Enginrs. Ord.	37/6	20/-	35/9	37/6
10/-	Projectile & Eng. Ord.	40/-	18/6	36/-	37/9
5/-	Redfern Holdings Ord.	5/9	3/1½	4/-	4/-
2/-	RFD Ltd. Ord.	6/6	3/4½	4/6	4/6
£1	" " 5½% Pref.	14/6	11/9	13/9	13/3
2/-	Rubber Imp. Ord.	7/9	3/1½	5/3	4/9
2/-	" " 'A' Ord.	7/-	3/-	3/9	3/9
£1	" " 5% 1st Pref.	15/-	11/3	12/3	12/3
5/-	Rubber Reg. Ord.	19/3	16/9	17/3	17/6
4/-	Shaw Francis Ord.	27/6	17/3	22/6	23/-
2/-	Silentbloc Ord.	13/3	8/6	9/3	9/6
5/-	Storey Bros.	46/-	28/3	45/3	44/3
2/-	Sussex Rubber Ord.	2/3	1/3	1/9	1/9
5/-	Sutcliffe Speak Ord.	17/6	11/-	14/1½	17/-
£1	Tootals	33/6	26/4½	31/6	30/3
£1	Turner & Newall Ord.	72/-	48/3	68/9	70/-
£1	" " " 7% Pref.	25/-	21/3	21/3	21/3
5/-	Universal Asbestos Ord.	50/-	24/-	26/3	26/3
5/-	Viscose Dev. Ord.	16/6	14/9	16/-	15/6
5/-	Warne W. (Holdgs.) Ord.	19/-	14/9	16/9	18/6

For Natural Rubber and GR-S
SUPERLATIVE TENSILES
AND ABRASION RESISTANCE

FRANTEX

For Neoprene
PHYSICALS COMPARABLE
TO CARBON BLACK

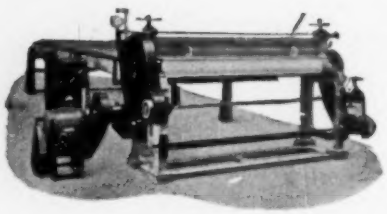
NEOFRANTEX

BOTH ARE NOTABLE FOR EXTRUSION

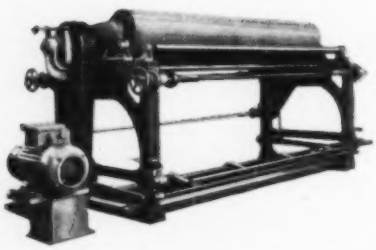
WITCO CHEMICAL CO., LTD.

Head Office: **BUSH HOUSE, ALDWYCH, LONDON, W.C.2**
Telephone: TEMple Bar 6473/6476
PEARL HOUSE, PRINCESS ST., MANCHESTER 2 (Central 9066/8). 62 ROBERTSON ST., GLASGOW, C.2 (City 3493)
FACTORIES, LABORATORIES AND SALES OFFICES—
U.S.A. · CANADA · GT. BRITAIN · FRANCE · HOLLAND

Latex Engineering Co



Motor Driven Spreader



110" Motor Driven Doubler

Also makers of Internal Mixers, Mixing Mills, Calenders, Presses, Extruders, etc.

VICTORIA STREET, DROYLSDEN, MANCHESTER
Telephone: Droylsden 1251 Telegrams: Washer, Droylsden

London Office:
4 CLEMENTS INN, LONDON, W.C.2
Telephone: CHAncery 2401/2 Telegrams: Plastrub, Estrand, London

Rubber Markets

LONDON

Short covering rallied values after a sharp decline that reflected Eastern liquidation. Later the Laos situation became the dominant factor in an otherwise dull and uncertain market. After higher prices had been paid, irregularity ensued in thin trading, but the tendency was easier on improved prospects of a peaceful settlement of the Laos crisis.

Latest prices are as follows:

No. 1 RSS Spot: 25⅛d.-25⅜.

Settlement House:

May 25⅛d.-25⅛d.

June 25⅛d.-25⅛d.

July/September 25⅛d.-25⅛d.

October/December 25⅛d.-25⅛d.

January/March (1962) 25⅛d.-25⅛d.

No. 1 RSS cif basis ports:

April 24⅞d.-25d.

May 24⅞d.-25d.

June 24⅞d.-25d.

Godown:

April 84¼ Straits cents nominal.

Latex

Centrifuged 60% latex per gallon in drums, seller, April, 14s. 7d., cif European ports. Spot, seller, 15s. 1d. Bulk, seller, d.w. 14s. 5d. Creamed, seller, 14s. 4d. nominal. Normal, seller, April, 12s.

NEW YORK

The New York rubber market ruled as under on March 24:

Dealers' Prices

US cents per lb., ex-dock

	March 24	Previous
No. 1 RSS, April	30⅛s	29⅞a
May	30s	29⅞b–29¾a
No. 2 RSS, April	30s	29¾a
May	29⅞s	29⅛b–29⅜a
No. 3 RSS, April	29⅞s	29⅜a
May	29¾s	29⅛b–29⅛a
No. 1 RSS, Spot	30⅛s	30⅛n
No. 3 amber blanket crepe, April	24½n	24½n

Futures — Rex Contract

	March 24	Prev. Close
March ..	29.63n	29.50n
May ..	30.10b–30.20a	29.95–29.97t
July ..	29.98t	29.65t
Sept. ..	29.80b–29.90a	29.45b–29.50a
Nov. ..	29.71t	29.35b–29.45a
Jan. ..	29.69t	29.25b–29.40a

Sales: 78. Tendency: Firm.

Futures were firm on speculative buying on March 24, reflecting the tension in Laos. Dealings were fair. Traders said that dealers were on the selling side. Interest in physical rubber was spotty.

SINGAPORE

The market opened steady with an upward tendency on March 24. After fluctuating within narrow limits, prices advanced on short-covering towards the close of the morning session but trading was thin. There was some demand for lower sheets but sellers were reserved. Prices were well maintained in the afternoon but operators were unwilling to extend their commitments owing to the Laos situation. Traders here said Shell's recent announcement that it would put up for sale this year 20,000 tons of polyisoprene had no visible effect on the market this week.

Malayan cents per lb., fob Malayan ports to open ports

	March 24	Prev. Close
No. 1 RSS, April ..	84⅞–85⅛	82⅞–82⅞
May ..	85⅛–85⅛	83⅛–83⅛
No. 2 RSS, April ..	83⅞–84⅛	82 –82⅛
No. 3 RSS, April ..	83 –83⅞	81 –81⅞
No. 4 RSS, April ..	80 –81	78⅛–79⅛
No. 5 RSS, April ..	72 –73	70⅛–71⅛
No. 1 RSS, Spot ..	84⅛–85	82⅛–82⅛
No. 3 blanket thick remilled crepe, April	64⅛–65⅛	63⅛–65⅛
No. 1 fine pale crepe, April	89⅛–90⅛	88⅛–89⅛
2X thin brown crepe, April	64 –65	62⅛–63⅛

Tendency: Quietly steady.

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums, fob at 168.00d. per gallon.

AMSTERDAM

The Amsterdam rubber market ruled as under on March 24:

Guilders per kilo

No. 1 RMA	March 24	Previous
March	2.37	2.30
April	2.37	2.30
May	2.37	2.30
June	2.37	2.30
April/June ..	2.37	2.30
July	2.37	2.30

Sales: Nil. Tendency: Steady.

DJAKARTA

The market closed quiet on March 25th. Demand tended to increase slightly but sellers were reserved awaiting further overseas market developments. There were no transactions.

Rupiahs per kilo

	March 25	Previous
Spot No. 1 Priok ..	32.00b	31.50b
Spot No. 2 Priok ..	31.00b	30.50b
Spot No. 3 Priok ..	30.00b	29.50b
No. 1 fine pale crepe, spot	29.50n	29.00b

CEYLON

The price of No. 1 RSS at Colombo on March 24 was 108 (107) Ceylon cents per lb.

BANGKOK

The price of No. 1 RSS at Bangkok on March 24 was 27.12½ (27.37½) US cents per lb.

CROP RETURNS

Unless otherwise indicated, the figures quoted, to the nearest thousand lb., represent crop returns for the month stated and for the number of months of the planting company's financial year to date. Corresponding figures are given in parentheses.

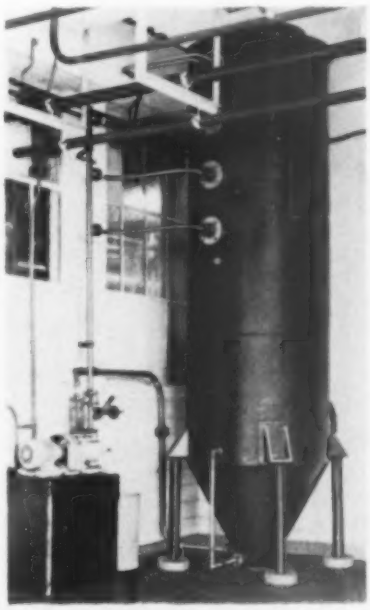
HARRISONS AND CROSFIELD LTD.
February

Malayalam—136 (45). 11 mths—8,360 (6,824).
Lunuva—65 (89). 2 mths—160 (210).
Lunuva crop decreases are due mainly to adverse weather and labour trouble.
London Sumatra Group—2,626 (2,459). 11 mths—29,236 (26,178).
Bah Lias—185 (150). 4 mths—847 (633).
Central—82 (75). 8 mths—637 (577).
N. Tongan—326 (256). 6 mths—1,714 (1,464).
Sialang—214 (212). 1 mth—214 (212).
Tanah Datar—79 (68). 2 mths—157 (136).
Bajoe Kidoel—243 (247). 11 mths—2,476 (2,272).
Djasinga—99 (104). 8 mths—783 (821).

Vinyl for Exteriors

A vinyl coating for aluminium house siding has been exhibited by Union Carbide Corp. in USA. Test panels have been exposed to sun and salt air on the Florida coast for 15 years, and test houses covered with the material over 11 years ago are said to be 'still as good as new.'

The siding is produced in white, pastel tints and in natural wood grain finishes. This year some 275,000 homes in USA are expected to be covered with the siding.



This plastics dust scrubbing tower has been exported to Germany by Tough Plastics Ltd. It has been installed by Elektrochemische Werke Munchen AG at the company's Munich works, and is built mainly from unplasticized pvc and polyester/glass-reinforced plastics

NATURAL
AND SYNTHETIC
LATEX COMPOUNDS

PRE-VULCANISED
LATEX

RECLAIM DISPERSIONS

COLOUR DISPERSIONS

VULCANISING DISPERSIONS

RL

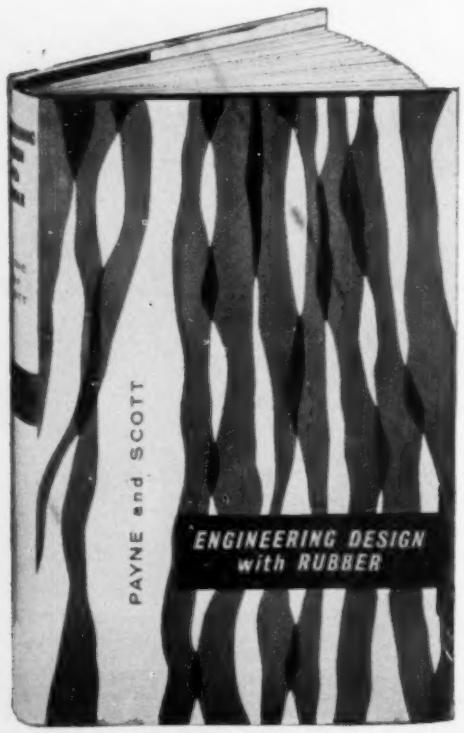
RUBBER LATEX LIMITED

Harling Road, Wythenshawe, Manchester.

Telephone: Wythenshawe 3226/7/8. Telegrams: Compounds, Manchester.

London Office: St. Dunstan's House, Idol Lane, London E.C.3. Telephone Mansion House 1005.

RL53



Now on Sale

Engineering Design with Rubber

A. R. PAYNE, B.Sc., A.Inst.P., A.I.R.I.
and
J. R. SCOTT, Ph.D., M.Sc., F.R.I.C., F.Inst.P., F.I.R.I.

R.A.B.R.M. MANUAL No. 4

The First theoretical examination of an increasingly important subject to appear in book form, it has also been designed to be a practical manual for engineers and rubber technologists faced with problems in rubber engineering design.

PRICE 50/-

(By Post 52/-)

PROSPECTUS ON REQUEST

Orders to:—

Rubber and Plastics Weekly Book Department, Maclaren House, 131 Great Suffolk Street, London, S.E.1

U.S.A. and Canada:—

Interscience Publishers Inc., New York

Industry INTELLIGENCE

Technical Data

Robac 22 Accelerator

A new data sheet recently issued by Robinson Brothers Ltd., Ryders Green, West Bromwich, gives details on the properties and uses of Robac 22 accelerator.

This is a standard accelerator for neoprene and is widely used in the rubber industry as it does not stain or discolour and may therefore be used on white or light coloured stocks.

Chemically Robac 22 is ethylene thiourea, coated with oil which renders it dustless and makes it possible to disperse the accelerator easily even in very soft mixes of neoprene without obtaining what is known as the orange peel effect.

Given in the pamphlet are storage characteristics of unvulcanized compounds made from neoprene W, WB and WRT, containing Robac 22, vulcanizing data and physical and ageing properties of vulcanizates. Also included are some suggested formulations for low and high hardness compounds, an oil resistant compound and one to meet ASTM specification S.C.BF 1.

Croda Surfactants

Croda Ltd. has issued two new technical data sheets, one dealing with Creto Cationic, a surface active agent, and the other with Cithrol 'SG', hexa ethylene glycol stearate. Both pamphlets contain similar layouts. The introduction gives a brief definition of the substance concerned, and then the composition and properties, function, manipulation, uses, and handling and storage requirements are given.

Creto is a member of the cationic group of surface active materials, a quarternary ammonium compound, whilst Cithrol 'SG' is a water soluble non-ionic surface active agent, stable to hard water and to metallic salts, being used as a 'scoop' finishing agent for textiles, as a spinning lubricant in rayon manufacture and as an anti-static agent.

Further information can be obtained from Croda Ltd., Cowick Hall, Snaith, Goole, Yorkshire.

Direct Moulding with Manosil

The direct-moulding process for making shoes, already widely used for children's shoes, is rapidly extending to other types.

Manosil Technical Service Note No. 13 gave the results of extensive work on a direct-moulding natural rubber compound containing Manosil AS7. Further work has now been completed, much of it devoted to studying the effect of SBR addition to compounds, and the results are published in Manosil Technical Service Note No. 17, issued by Hardman and Holden Ltd., Manox House, Miles Platting, Manchester 10.

Reinforcing fillers such as Manosil AS7 and VN3 impart good wear characteristics and low specific gravity to the rubber compounds used in the process.

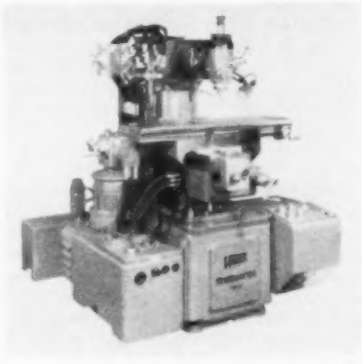
Details are given in the pamphlet on a number of different formulations of natural rubber and SBR showing the effect on the properties produced by altering the order of mixing, addition of zinc oxide, peptization and addition of crumb and reclaim. Also given are formulations for lower cost SBR compounds, a translucent oil-extended SBR compound and natural/SBR blends

Machines, Materials and Equipment

Die-Sinking Machine

The Tracemaster TM.43A made by Hayes Engineers (Leeds) Ltd., Gelderd Road, Leeds 12, is a precision automatic copy die-sinking machine, with a 43 x 11in. table. With its fully automatic die-sinking cycle, either automatic longitudinal or cross slide reciprocation can be selected with automatic pick feed on the corresponding slide.

The tracer valve controls the vertical hydraulic ram giving depth control, and the stylus assembly has a universal



motion which enables steep slopes to be copy milled. The tracer valve also controls the horizontal traverse by means of a servo system, which stops the traverse when the stylus is fully deflected. This enables vertical walls to be automatically copy milled, and provides an approximately constant rate of traverse over the contour being milled.

A special feature is the provision of two balancing cylinders for the knee assembly. An adjustable control enables the full weight of the knee assembly and any weight placed on the table to be exactly balanced.

Cheaper Screwdrivers

Desoutter Bros. Ltd., The Hyde, Hendon, N.W.9, announce reductions in price of many of their pneumatic screwdrivers. These reductions, which came into effect recently, are between 5 and 10%.

Publications

Carbon Black Abstracts

'Carbon Black Abstracts' is a quarterly periodical prepared by the Cabot Technical Information Service in Boston, Mass., and distributed in the UK by Cabot Carbon Ltd., 62 Brompton Road, London, S.W.3. The latest issue, Vol. 9, No. 4, contains 138 abstracts on carbon black, divided into four groups as follows: (1) Production and Processing; (2) Applications; (3) Fundamental Properties; (4) Economics, Statistics and News of the Industry. Included in the second group are electrical and metallurgical applications of finely divided carbons, and the uses of carbon black in plastics and synthetic resins.

Carbon Blacks

Cabot Carbon Ltd. has issued a booklet called 'The Regal Series of Low Modulus Oil Furnace Carbon Blacks', containing two recent papers, namely 'Carbon Black Structure Effects in Synthetic Rubbers', which was first presented at the *Rubber and Plastics Age* 2nd International Synthetic Rubber Symposium, and 'Effects of Carbon Black Structure on Tyre Tread Wear', first presented at a meeting of the Division of Rubber Chemistry, American Chemical Society during 1960.

The first paper describes the effect of carbon black structure on properties of unvulcanized mixtures, on extrusion die swell and on tyre tread wear. In addition there are several diagrams, and a summary of the discussion which followed the original presentation of the paper is given.

The second paper deals with the effects of carbon black 'structure' on the mechanical properties of rubber, mainly roadwear performance. With the aid of tables and diagrams, information of different tests that were carried out are given and the results follow. A short summary of the complete article provides a neat conclusion.

Further information about the booklet can be obtained from Cabot Carbon Ltd., 62 Brompton Road, London, S.W.3.

COMPANY MEETING

Anchor Chemical Co. Ltd.

FURTHER RECORD TRADING

Policy of Diversification Continued

THE fifty-fourth annual general meeting of the Anchor Chemical Co. Ltd. was held on March 27 at the registered office, Clayton Lane, Clayton, Manchester, Mr Frank Savaage, MA, BSc(Oxon), ARIC, chairman and joint managing director, presiding.

The following is the statement by the late chairman (Mr Thomas Martin, FIRI, who died on March 7 last) circulated with the report and accounts:

I have pleasure in presenting the directors' report and statement of accounts for the year ended November 30 1960.

Before commenting on the figures, I would like to welcome to our Board Mr Stanley A. Horobin, who has been appointed to the position of Home Sales Director, and I trust you will confirm this appointment without hesitation. Stanley Horobin has served in our Sales Department since he joined the company in 1931, except for a break during the war when he attained the rank of Captain with a Royal Artillery Parachute Regiment.

Trading Profit and Allocations

The consolidated trading profit before taxation is £236,088 as against £164,362 last year. The provision for taxation on the profits of the year is £114,837 and after deducting minority interests and capitalization expenses the profit applicable to the group is £118,559 (£93,576).

The unappropriated group profit brought forward was £174,065 and dividends already paid total £17,640, leaving a disposable balance of £274,984.

Your directors recommend the allocation of £50,000 to General Reserve and the payment of a final dividend of 11% (less income tax) on the ordinary shares making a total of 17% for the year. This distribution is equivalent to 25½% on the ordinary share capital before our capitalization issue on March 30 1960, when the total ordinary dividend for the previous year was 20%. The remaining balance of undistributed group profit to carry forward will be £197,697.

The notice convening this meeting includes notice of a special resolution to amend our Articles of Association. The alterations to Article 101 are to restrict the borrowing powers of the company and its subsidiary companies to the issued and paid up capital of the parent company and are in accordance with the requirements of the Council of the Stock Exchange, London. Article 108 is altered to remove possible restrictions on the appointment of directors to special offices and to prevent termination of such office on ceasing to be a director. The deletion from Article 143 is to take advantage of the Cheques Act, 1957, regarding endorsement of dividend warrants.

Record Sales

It is a great pleasure to report a further record trading year for our company. Sales increased by 18% to a record figure of more than £7m. sterling. We have been fortunate in that the period under review has, on the whole, remained free from industrial disputes with one or two exceptions; the most important of these to our company was the tally clerks' strike, which resulted in difficulties and delays, the cost of which cannot be estimated. The recession in the car industry caused us some concern but from the point of view of our company its effects were balanced by considerable activity in other tyre consuming fields.

Although we are continuing with our policy of diversifying, the rubber industry still continues to be our major interest. One of our most important contributions to this industry is the supply of Dixie grades of carbon black. I have in previous years referred to the increased competition in carbon black, which has continued with the introduction of further manufacturing units in many countries of the world. With increased production capacity now available from our supplier's UK manufacturing unit at Swansea, some success has been achieved in increasing sales, but, owing to the intensity of competitive development, progress has been slower than desired. Special efforts are being made to improve our position both at home and abroad. I referred last year to uncertainties in France resulting from the new producing unit in that country. It has now been decided that the French market for carbon black will in consequence be lost to us. We shall, however, continue to be interested in sales from this unit to countries outside France; this will improve our overall competitive position.

Progress with Cycolac

Most encouraging progress continues to be made in selling Cycolac, the high-impact thermoplastic ABS resin, manufactured by Marbon Chemical Division of Borg-Warner. A large potential is forecast for this product and the development represents an important contribution to our policy of diversification. Activities in this field have been placed in the hands of our newly-formed Plastics Division to operate both in the UK and abroad, and sales have progressed rapidly in accordance with the forecast. Arrangements have been made for part of the manufacturing operation to be performed in the UK, thereby ensuring quicker service to our customers. As I write we have just completed a technical conference here for our agents from Western Europe designed to improve and consolidate our selling organization there.

The policy of extending our own manufacture has progressed and further multi-purpose plant has been installed to permit development in the manufacture of specialized chemicals, particularly in the fields of curing agents for synthetic resins, and of oil additives. Sales of our own manufactured products increased by 22% over those for the previous year.

Export Sales

As you know, we have for many years given high priority to the development of export sales, and we have continued to do so in support of the special appeal from the Prime Minister. We have again assisted our agents overseas with visits by our own commercial and technical personnel. In the year under review there has been a visit by our Export Director together with one of our senior executives to the Far East and Australasia, and many visits have been made to the Continent of Europe. I am particularly glad to report that our exports during the year increased by 22% representing our eighth consecutive year of increase.

Our non-trading subsidiary company, British Anchor Chemical Corporation, who act as our permanent office in New York, have again taken an invaluable part in our operations and have performed excellent service in ensuring close contact with our American principals and in giving service to our customers throughout the world.

Current Year's Prospects

I usually try to give some indication of our prospects for the year ahead. It is difficult for me to forecast the possible effects of the somewhat uncertain trading outlook in the world today and of the wind of economic change which may blow from the USA. As I write, our sales are continuing on a satisfactory level; subject to the maintenance of peace and reasonable economic stability we see no reason why our progress should not continue during the forthcoming year.

Our various welfare schemes and amenities continue to operate successfully. In closing my report I wish to place on record our thanks to all our staff and agents throughout the world who have contributed in their various capacities to this further successful year.

The report and accounts were adopted and the dividend, as recommended, was approved.

The retiring directors, Mr Stanley A. Horobin, LIRI, Mr Frank Savaage, MA, BSc(Oxon), ARIC and Mr Arthur L. Hadfield, FCA, were re-elected.

A special resolution was also passed making certain alterations in the Articles of Association in connexion with the borrowing powers of the company and the appointment of directors to special offices.

Synthetic Rubber Prices

Prices of synthetic rubbers appear regularly in RUBBER AND PLASTICS WEEKLY *in the first week of each month. It will be appreciated if suppliers will give notification of any price changes or additions to their range. C/f duty paid quotations are subject to slight variation due to exchange, ocean freight and insurance fluctuations. Prices are in pence per lb., except where otherwise stated. Grades are expressed as follows:* 1001/2/6 = *grades* 1001, 1002 *and* 1006.

(e-qdp)—Ex-quay duty paid (cifUKdp)—cif UK duty paid (e-i)—Ex-installation (ddp)—Delivered duty paid (e-sUK)—Ex-store UK (ex-wUK)—Ex-warehouse UK (d)—Delivered BM—black masterbatch CBM—cold, black masterbatch CNP—cold, non-pigmented CNS—cold, non-staining COE—cold, oil extended COELC—cold, oil extended, light coloured CO/BM—cold, oil/black masterbatch CPOE—cold, pigmented, oil extended CRE—cold, rosin extended dw—Dry weight HN—high nitrile HNP—high nitrile, powder HP—hot, pigmented HS—high styrene HMW—high mol. wt. LMW—low mol. wt. MHN—medium high nitrile MLN—medium low nitrile MMW—medium molecular weight MN—medium nitrile NS—non-staining TS—total solids RTV—room temp. vulc.

SBR TYPES AND HIGH-STYRENE RUBBER

Ameripol (Goodrich Gulf) (e-qdp)
(min., 70,000-lb. lots)

1000/1	Hot, Non-Oil	23.1
1002/6/7	,, ,,	23.34
1009/11	,, ,,	23.71
1012	,, ,,	23.24
1013	,, ,,	23.94
1500/1/2	Cold, Non-Oil	23.1
1703	COE, 25% Oil	*20.31
1705	,, ,, ,,	*20.07
1707/8	,, 37.5% Oil	*18.89
1710/12	,, ,, ,,	*18.66

*Under 70,000 lb., min. 600 lb.

ASRC (American Synthetic Rubber Corpn.) (e-sUK)

1004/6	Hot, non-oil	22.25
1009	,, ,,	24.0
1018	,, ,,	24.75
1019	,, ,,	24.5
1500/2/7	Cold, non-oil	22.25
1503	,, ,,	24.25
1703	COE	20.5
1708	,,	18.0
1712	,,	17.75
1713	,,	16.75
3014	Hot, non-oil	25.75
3105/6	Cold, non-Oil	22.25
3110	,, ,,	24.0

Cariflex (Shell Chemical) (e-sUK)

S-1000	Hot	22.25
S-1002	,,	23.375
S-1006	,,	22.25
S-1009/11/13	,,	24.0
S-1500/2/9	Cold	22.25
S-1600/2	CBM	19.625
S-1605	,,	19.375
S-1606	,,	18.75
S-7652	,,	20.0
S-1703	COE	19.25
S-1707	,,	18.0
S-1709/12	,,	17.75
S-1803	COBM	17.875
S-1806	,,	16.625
S-1807	,,	17.375
S-1808	,,	15.25

FR-S (Firestone) (de)UK*)

1000/1/4/6/7 and 195	Hot	22.50
1500/2 and 146	Cold	22.50
1703 and 173	OE	19.11
1710/12 and 184	,,	18.00
178	,,	18.25
201	,,	16.71
1009 UK Specialty		23.06
1012 ,, ,,		22.59
1013 ,, ,,		23.59
1014 ,, ,,		26.18
181 ,, ,,		22.50
182 ,, ,,		23.29
147 ,, ,,		20.94
158 ,, ,,		28.00
158-S		27.50

*Import Duty not included

Int. Synthetic Rubber (d)

Intol 1500/2	22.5
Intol 1509	22.5
Intol 1570	23.5
Intol 1006	22.5
Intol 1710	18.0
Intol 1712	18.0
Intol 1778	18.25

Naugapol (Naugatuck Chemical) (e-sUK)

1016	28.0
1018	28.5
1019	28.0
1022	31.0
1023	32.75
1503	27.75
1504	34.5
6101	26.25
6102	27.75
K-45	30.75
K-50	31.5
KO-50	29.0
6003	28.5
6100	32.25

ANIC (e-qdp)

1500	22.25
1502	22.25
1708	18.00
1712	17.75

Philprene (Phillips) (d)

1000/6	Hot, non-pig.	22.50
1009	,, ,,	24.25
1018	,, ,,	26.97
1019	,, ,,	26.50
6701	,, ,,	24.23
1500/2	CNP	22.50
1503	,,	26.27
6630	,,	25.18
6632	,,	24.23
1601	CP	19.70
1603	,,	19.80
1605	,,	19.625
1606	,,	19.00
1608	,,	18.90
1609	,,	21.12
6662	,,	18.90
6655	,,	19.80
1703	COE	20.75
1708	,,	18.25
1712	,,	18.00
6700	,,	18.01
1803	CPOE	18.125
1805	,,	16.11
1808	,,	16.50
6608	,,	15.27
6753	,,	15.61
6754	,,	15.45
6755	,,	17.68

Plioflex (Goodyear) (ex-wUK)

1006	HNP	22.25
1500/2/7/8	CNP	22.25
1006	S	22.75
1703	COE	19.25
1710/12	,,	17.75
1773	COELC	19.25
1778	,,	18.0
B—6		27.5
B—5		28.0

Polysar (Polymer UK) (e-sUK)

S Hot	22.25
S-630 Hot	22.25
Kryflex 200 Cold	23.5
Krylene	22.25
Krylene NS	22.25
Krylene 602 Cold	22.25
Krynol 651 COE	17.75
Krynol 652 ,,	18.0
S-X 371 Process Aid	24.0

Synpol (Texas-US Chemical) (e-qdp)

1000/1	Hot	22.25
1002	,,	22.47
1006/7	,,	22.25
1009	,,	22.81
1012	,,	22.38
1013/61	,,	22.25
X274	,,	23.45
8000	,,	22.25
1500/02/51	Cold	22.25
1703	COE	19.25
1707/8	,,	18.0
1711	,,	17.88
1712	,,	17.75
8200	,,	18.0
8201	,,	16.6
8202	,,	16.38
8152	CBM	18.6
8151	COBM	18.2
8253	,,	15.84
8254	,,	15.45
8255	,,	14.8
8267	,,	16.4

(Masterbatch prices US cents per lb. fas Gulf ports)

SBR LATICES

Copo (Copolymer) (cifUKdp
(10-ton lots)

2101	(dw)	46.3
X-765	,,	40.8
X-800	,,	37.2
2102/5	,,	38.0

Pliolite Rubber (Goodyear) (d)

2000	40

Latex (dw)

2001/4/5/8	40
5350	40

Pliolite Resin (Goodyear) (d)

101A	(dw)	44
150	,,	50
151	,,	35
160	,,	50
170	,,	50

Hycar (B. F. Goodrich) (ddp)

2507 (HS) dw	48

Polysar (Polymer UK) (e-sUK)

Latex, type IV	32.5 TS
Latex, type 722	31.75 TS
(Non-returnable 45-gallon drums)	(e-i)
Latex, type 722	28.75 TS
(bulk quantities)	

Int. Synthetic Rubber (ex-wks)

Intol Latex M23B/R23/F28	22.25
Intol Latex 62A	27.0

Dylex (Koppers Int. CA) (fas)

K-42A/52/31/900	31.6

ACRYLONITRILE TYPES

Butaprene N (Firestone) (cifUKdp)

NL	52.5
NAA	56.25
NF	51.5
NXM	60.18

Chemigum (e-s)

N—1	75
N—3A	52
N—5	52
N—6G/7/8/600X	45

Hycar (British Geon) (UKd)
(500-lb. lots and over)

1001	High Nitrile Hot	52
1041	,, ,, Cold	52
1002	MHN Hot	45
1042	,, Cold	45

Hycar (B. F. Goodrich) (ddp)
(500-lb. lots and over)

1411	HNP	66
1432	MHN (crumb)	64
1072	,, (carboxyl)	66
1312	,, (liquid)	55
1043	MLN	51
1014	Low Nitrile	61

I.C.I. (min., 5-cwt. lots) (UKd)

Butakon A-4051 HN Cold	52
Butakon A-3051 MN Cold	45
Butakon A-3002 ,, ,,	45

Paracril (US Rubber) (dwe-sUK)

18-80	Low Nitrile	61
AJ	,, ,,	50
B	MLN	51
BJ	,,	51
BLT	,, Cold	51
BJLT	,, ,,	51
C	MHN	59
CLT	,, Cold	59
CV	,, (crumb)	63
D	High Nitrile	67
ALT		51
OZO		47

Polysar (Polymer UK) (d)

Krynac 800 MN	45
Krynac 802 LN	45
Krynac 803 MN (low Mooney)	45
Krynac 801 HN	52
Krynac 804 (MN-cross linked)	45

ACRYLONITRILE LATICES

Butaprene N (Firestone) (cifUKdp)

N-300 (dw)	53
N-400 ,,	60.5

Chemigum Latex (Goodyear) (d)

200	(dw)		65
235/6	CHS	,,	60
245	B	,,	52
245/6/7/8	CHS	,,	52

Hycar (B.F. Goodrich) (ddp)
(dry weight, drum lots)

1551 High Nitrile	66
1552 MHN	57

Hycar (British Geon) (UKd
(dry weight, 3 drums and over)

1561	High Nitrile	60
1571	,, ,, (carboxyl)	60
1562	MHN	52
1577	(modified)	52

ACRYLIC TYPES

Hycar (B. F. Goodrich) (ddp)

4021 Slab, 500 lb. and over	144
4501 Latex, dry weight	96

BUTYL TYPES

Esso (e-sUK)

Regular 035/150/215	21.75
Regular 217/8	21.75
Regular 325	21.75
Non-staining 165	22.75
Non-staining 268	22.75
Non-staining 365	22.75

Polysar (Polymer UK) (e-sUK)

Butyl 100/200/300		21.75
Butyl 301/400	NS	21.75
Butyl 101	NS	26.25
Butyl 402	NS	22.5

Hycar (B. F. Goodrich) (ddp)
(500 lb. and over)

2202 Brominated	68

NEOPRENES

(ddp)

W	(dwdel)	42.62
WHV	,,	38.5
WRT	,,	48.37
WX/GN/GNA	,,	44.62
GRT and S	,,	45.62
AC	,,	57.125
KNR	,,	75.62
AC 'M' and 'S'	,,	57.125
CG/AD	,,	57.125

The above prices refer to neoprene produced in the U.S.A. Prices of neoprene types produced at Du Pont's Maydown, Northern Ireland, plant are as follows:

W	(dwdel)	38.5
WRT	,,	44.0
WX	,,	40.5

Latices—Dry
(per lb. del, min., 50 lb.)

571	49.75
842A	49.75
572	51.25
601A	51.87
650	54.125
735	51.25
736	51.25
950	58.25
60	51.87
750	51.25
635	53.62

SILICONE RUBBERS

Midland Silicones
(500-lb. lots del)

Stocks	16s. 6d. to 35s.
Pastes	26s. to 35s.
Gums and base stock	36s. to 42s.
Cold-curing silicone rubber	20s. and 23d. 6d.

I.C.I. Silicones

Gums (40-lb lots del)	39s. 6d.-47s.
Stocks (250-lb. lots del)	22s.-35s.
Pastes (1000-lb. lots del)	27s.6d.-35s.9d.
Silcoset (RTV) (250-lb. lots del)	21s. to 24s.

REINFORCING RESINS AND RUBBERS

I.C.I. (min., 2-ton lots) (UKd)

Butakon S-8551	36.5
Butakon S-7001	33.5

Hycar (B.F. Goodrich) (ddp)

2007 (powder)	42.5

Pliolite (Goodyear) (d)

S—6B	36.5

Polysar (Polymer UK) (e-sUK)

SS-250 HS (bale)	27.25
SS-250 ,, (flake)	27.5
Kryflex 252 HS	25.5
Kryflex 202 (HMW Cold polymerized)	25.75

Cariflex (Shell) (e-sUK)

SP-103	27.75

Cyclite (Durham Raw Materials) 42

HYPALON

(ddp)

20	48
30	60.25
40	50.75

Plantation Newsletter

CAMPAIGN TO BOOST NATURAL RUBBER CONSUMPTION

FROM KUALA LUMPUR

THE president of the Penang Rubber Trade Association, Mr Heah Joo Seang, has urged the formation of an international natural rubber association — comprising Malaya, Africa, and all rubber-producing countries in Asia — to launch intensive marketing campaigns among consumers.

'Development of natural rubber should be a joint effort', he told the association's annual meeting. He suggested that such an organization should pool all its resources, scientific technique and information so that the many problems confronting the industry could be solved. Representatives could be sent to all consuming countries to establish contacts with manufacturers and build up good will.

He also urged the Malayan Government to consider seriously the advisability of establishing trade commissions or appointing commercial attachés in every embassy and consulate throughout the world where rubber is consumed so that concerted action could be taken to further the interests of the industry. Mr Heah said that this was a matter of extreme urgency and should receive attention immediately.

Reviewing the production and consumption of both natural and synthetic rubber, Mr Heah said that although consumption would increase by 170,000 tons this year, this was made up almost entirely of synthetic.

Prejudice Against Natural

The inference to be drawn, he said, was that there was a prejudice against natural rubber because of the wide fluctuations in price and complaints about the quality of shipments.

'We cannot agree, despite the rapid advances in laboratory techniques, that a synthetic has been produced which is equal in quality to natural rubber', Mr Heah said.

'Manufacturers are forced to resort to the use of synthetic and to develop a better type of synthetic because of the increasing demand for rubber and the failure of natural to supply the needs of the consuming countries', he added.

Mr Heah urged measures to prevent violent fluctuations in price; to gain the goodwill of manufacturers by maintaining a uniform quality of Malayan shipments; to introduce a replanting as well as a new planting scheme in every producing country; and to endeavour to allay the fears of manufacturers by stepping up natural rubber.

A recommendation is expected to go before the Malayan Government shortly on the future of the estate replanting scheme and what form continued help to estates should take.

It will end a period of speculation about whether the estates can expect continued help with replanting after the end of 1962 when the present estate scheme, financed from the $280m. replanting fund for estates and smallholdings begins to tail-off.

by our Malayan Correspondent

A joint working party has been formed consisting of representatives of the Rubber Producers' Council and the Government to examine details of the present estate replanting scheme and consider its future. Its report will be considered by the Government.

The present position is that estates are given a grant of $400 an acre to replant up to 21% of their acreage. This aid is provided from the $168m. allocated to estates out of a total of $280m. provided in 1956 for assisting replanting in the rubber industry.

Under the present programme, no fresh applications will be accepted for replanting assistance for estates after December 31 1962.

No Firm Indication

However, this would not mean that no further replanting payments would have been made after this date (as the payments are made in five annual instalments and these would continue until 1967) but no new applications would be considered.

There has been no firm indication from the Malayan Government that it would continue with estate replanting aid, though it has been generally expected that some help will be given. The smallholding scheme now has no time limit to it.

The second five-year development plan, starting this year, contains $165m. for Government assistance with rubber replanting between 1961 and 1965, compared with $153.4m. for the previous five years.

The overall target for rubber replanting, both estates and smallholdings, is 650,000 acres during the five years to bring the proportion of Malaya's rubber acreage under high-yielding material to 65%.

It was stated in the plan that it was expected that during the five-year period the proportion done by smallholders will be somewhat larger and that by estates somewhat smaller than in the previous five years.

Latest Wills

Edwin George Hawkins, of 748 Bury Road, Bolton, Lancs., formerly of Glascoed, Allestree Lane, Allestree, Derby, district manager of the Firestone Tyre and Rubber Co. Ltd., who died on November 24 last, left £2,847 gross, £2,488 net value.

Mary Ann Goodliff, of Roseneath, Badby Road, Daventry, Northants, who died on November 15 last, left £31,632 gross, £31,457 net value.

Future Events

Institution of the Rubber Industry

West of England Section.—April 8 at Melksham House, Melksham, at 8 p.m. Annual general meeting, followed by 'A Short History of the Rubber Industry', by Dr S. S. Pickles and J. M. Chrystal, AMIMechE, FIRI (Geo. Spencer Moulton and Co. Ltd.).

Plastics Institute

North-Western Section.—April 7 at the Textile Institute, 10 Blackfriars Street, Manchester 3, at 6.45 p.m. 'Pastics in Building — Thermal Insulation', by W. B. Brown, BSc, PhD, DIC, ARCS, ARIC (Monsanto Chemicals Ltd.).

Southern Section.—April 6 at the Chemistry Department, University of Southampton, at 7.30 p.m. 'Recent Developments in the Use of Acetal Resins', by G. F. C. Barrett, BSc, PhD, LLB, ARIC (Du Pont Co. (UK) Ltd.).

Western Section. — April 5 at Gloucester Technical College, at 7 p.m. 'Some Aspects of Plastics in the Building Industry', by J. R. Crowder, BSc, PhD (Department of Scientific and Industrial Research).

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

(B795,769). Insulation materials and shaped inserts for use in the casting of concrete articles, all made of expanded polystyrene plastics. Commerce Factors (G.B.) Ltd., Gallows Park, Torpoint, Cornwall. To be associated with No. 782,460 (421S, 503). (Class 17; February 15.)

COROPLAST (810,464) Adhesive tapes, bands and strips, all included in Class 26, wholly or principally of plastics. Fritz Müller 'Coroplast' K.G. (a Kommandit-Gesellschaft organised under the laws of Germany, personally responsible partner Richard Röhm), 271 Wittener Strasse, Wuppertal-Nächstebreck, Germany. Address for service is c/o H. A. L. Venner, 1 Great James Street, Bedford Row, London, W.C.1. (Class 26; February 15 1961.)

COROTHENE (810,467) Adhesive tapes, bands and strips, all included in Class 26, wholly or principally of plastics. Fritz Müller 'Coroplast' K.G. (a Kommandit-Gesellschaft organised under the laws of Germany, personally responsible partner Richard Röhm), 271 Wittener Strasse, Wuppertal-Nächstebreck, Germany. Address for service is c/o H. A. L. Venner, 1 Great James Street, Bedford Row, London, W.C.1. (Class 26; February 15 1961.)

CORODYNE (810,458) Adhesive tapes, bands and strips, all included in Class 26, wholly or principally of plastics. Fritz Müller 'Coroplast' K.G., 271 Wittener Strasse, Wuppertal-Nächstebreck, Germany. Address for service is c/o H. A. L. Venner, 1 Great James Street, Bedford Row, London, W.C.1. (Class 26; February 15 1961.)

NEW COMPANIES

Guard Rubber Co. Ltd. (681,922).—January 30. Capital: £100 in £1 shares. To carry on the business of manufacturers, importers, exporters and distributors of, and dealers in, rubber, latex, synthetic rubber and rubber products, medicines, drugs, etc. The first directors are to be appointed by the subscribers.

Allsop Dental Supplies Ltd. (681,958).—January 30. Capital: £500 in £1 shares. The directors are: Miss Frances E. Allsop, 347 Southborough Lane, Bromley, Kent; Arthur L. Rowles, 4 Barfield Road, Bickley, Kent. Regd. office: 37/8 Chancery Lane, W.C.2.

Ealing Plastics Ltd. (681,976).—January 30. Capital: £1,000 in £1 shares. To carry on the business of packaging specialists, etc. The directors are: Sydney A. Whiting and Mrs. Mary F. Q. Whiting, both of 5 Southcote Avenue, Feltham, Middlesex; William Smith and Mrs. Mary Smith, both of 153 South Ealing Road, W.5. Regd. office: 1 Durham Road, W.5.

Mural and Decorative Plastics Ltd. (682,364).—February 2. Capital: £1,000 in £1 shares. The directors are: Marles A. E. Vorbrodt, 1 Greenway Close, Totteridge, N.20; Ronald A. MacDonald, 99 Cadogan Gardens, S.W.3 (director of Mandoline Lines Ltd.). Regd. office: 335 City Road, E.C.1.

G. W. Webb (Plastics) Ltd. (682,331).—February 2. Capital: £100 in £1 shares. To carry on the business of plastics engineering in all its branches, experts in welding in all metals, etc. The first directors are: George W. Webb, 94 Beechwood Park Road, Solihull; Freda O. Smee, 469 Reddings Lane, Hall Green, Birmingham; Arthur H. Osborne, 83 Arlington Road, Warstock, Birmingham. Regd. office: 1211a Stratford Road, Hall Green, Birmingham.

Monobloc Aerosols (Sales) Ltd. (682,232).—February 1. Capital: £100 in £1 shares. To carry on the business of designers, manufacturers of, and dealers in, extruded containers, packages, cartons, specially those for containing fluids and powders; fillers or pressurizers of aerosols, etc. The first directors are to be appointed by the subscribers. Regd. office: 26/28 Hallam Street, W.1.

K. Godfrey Ltd. (682,195).—February 1. Capital: £1,000 in £1 shares. To carry on the business of processing thermoplastic, thermosetting, rubber or other materials, etc. The directors are: Walter S. K. Godfrey, 1 Tyndale Mansions, Upper Street, N.1; David A. Biggs, 151 North Church Road, N.1; Charles E. L. Braums, William D. Cakebread and Bernard J. Moulange. Regd. office: 58 Finsbury Pavement, E.C.2.

Bacsa Ltd. (682,520).—February 3. Capital: £1,000 in £1 shares. To carry on the business of suppliers, manufacturers of, and dealers in, plastic goods, etc. James D. Cresswell, 70 Grasmere Avenue, Slough, Bucks, is the first director. Regd. office: 108 Park Street, W.1.

Canal Dyeing Co. Ltd. (682,976).—February 9. Capital: £1,000 in £1 shares. To carry on the business of dyers and finishers of all kinds of textile and plastic goods, etc. The directors are: John W. Peet, 19 St. Albans Road, Halifax; Peter Waddington, Sheldon, Heath Road, Halifax. Regd. office: Old Lane Dyeworks, Old Lane, Halifax, Yorks.

CLASSIFIED ADVERTISEMENTS

RUBBER AND PLASTICS WEEKLY

APPOINTMENTS VACANT

6d. a word, Minimum 12/6 Box 2/-

ASSISTANT chief chemist. Applications are invited from qualified chemists with good knowledge of synthetic rubbers and plastics. Applicants should have first-class experience in chemistry.—Apply giving details of age, experience, qualifications, salary, etc., Personnel Manager, Fireproof Tanks Ltd., The Airport, Portsmouth. (940)

CHEMIST/technologist required by progressive and rapidly expanding company in the plastics field located in the Home Counties. Candidates should hold BSc or API qualifications, although consideration will be given to applicants who have had full experience in the compounding of PVC. Age preferred 23/30 years.—Box 903. (903)

APPOINTMENTS VACANT

(continued)

ENGINEER/rubber technologist wanted by London company for development work in rubber and expanded plastics. The post is permanent and offers excellent prospects. Applicants should state salary required, technical qualifications, etc. — Apply Box 921. (921)

IF you are between 21/30 years old, have received a Grammar School education or above, and feel frustrated in your present work—write personally to Peter Lloyd, William Warne & Co. Ltd., India Rubber Mills, Barking, Essex. We have a vacancy for a keen man to handle an important sales section. The present holder of the post will shortly be appointed to the outside technical selling force of the company. A good pension scheme operates. Holiday arrangements will be honoured. (935)

CLASSIFIED ADVERTISEMENT FORM

Please keep for future use if not required immediately

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35

APPOINTMENTS WANTED 10s. MINIMUM · OTHER HEADINGS 12s. 6d. MINIMUM · ..... words @ 6d. per word

BOX No. 2/- EXTRA Total Cost.....

Name.....

BLOCK LETTERS PLEASE Address.....

.....

APPOINTMENTS VACANT
(continued)

RUBBER TECHNICIAN

TURNER BROTHERS ASBESTOS CO. LTD.
HINDLEY GREEN, NR. WIGAN

require a man 25/35 years of age with experience in the Rubber or Chemical industries. Applicants must have appropriate professional qualifications and have had some experience in quality control and direction of people on inspection duties. This is essentially a job for a man able to work with members of a production team and assist in the technical field.—Apply in the first instance, briefly stating age, qualifications and experience to Chief Personnel Manager, Turner Brothers Asbestos Co. Ltd., Spotland, Rochdale. (938)

MANAGER to take charge of a small rubber company in the Manchester area specialising in calendered sheet and fabric. Must be practically experienced in all aspects of calendering both friction and coating with a sound knowledge of compounding. Salary according to experience in the £1,200—£1,500 range.—Applications should give full particulars of experience, age, etc., to Box 943. (943)

MAINTENANCE engineers for rubber and plastic factory, fitter welder and fitter turner. Top rates paid to first-class men. — Apply to Works Manager, 243 Church Road, Mitcham, Surrey. (918)

OPPORTUNITY occurs for keen intelligent young man in office of rubber manufacturers and merchants to expand sales of merchanting department and buying of materials. Large existing turnover. Excellent prospects for ambitious individual.—Write full details of experience, age and salary required to Box 945. (945)

RUBBER chemist wanted for shoe factory in Canada. The man we are looking for must be able to take full responsibility in the preparation, from the raw material to the finished compound, both with regards to the formulas as well as supervising the milling room. He must have the experience to work on his own initiative, and must have particular knowledge of rubber compounds used for vulcanising of in and outdoor footwear. Applicants will be interviewed in the United Kingdom. —Apply Box 946. (946)

STAFF APPOINTMENT

DESIGNER AND FITTER ENGINEER OF HOSE COUPLINGS

A vacancy exists for a new staff appointment with an old-established and progressive rubber hose manufacturer in Hertfordshire as a fitter engineer for designing and supervising the assembling of low pressure and high pressure cotton and wire braided hose couplings, and other hose fitting work.

Excellent prospects for staff promotion.

Age between 30 and 40 years. Previous experience very necessary.—Box 850. (850)

APPOINTMENTS VACANT
(continued)

MORLANDS of Glastonbury require a chemist, preferably with subsidiary physics, for their sheepskin-lined footwear factory. Degree, Dip. Tech. or HNC. Experience of rubber and adhesives in relation to their use in the leather trade would be an advantage. Salary £700 to £1,200 per year according to age, qualifications and experience.—Interested persons should write to Personnel Officer, Morlands, Glastonbury, Somerset, for application form. (932)

RUBBER technologist, 30/40, required in India to undertake the full management of rubber product development and quality control. This is a senior post and calls for a man with good educational background and a comprehensive knowledge of compounding and methods of manufacture.—Applicants should write giving age, full particulars of education and experience and present salary to Box 941. (941)

SENIOR RUBBER CHEMIST

Senior rubber chemist required. Experience of hose manufacture, sheet, extrusion, moulding and general mechanical rubber goods is essential. Status managerial. Salary in accordance with qualifications and experience. Contributory pension scheme.—Apply giving full details of training, experience and salary required to Personnel Officer, David Moseley and Sons Ltd., Chapelfield Works, Ardwick, Manchester, 12. (934)

RUBBER TECHNOLOGIST

A vacancy has arisen with expanding manufacturing organisation in the North-West for a suitably qualified Rubber Technologist.

Preference will be given to candidates between the ages of 25 and 30 who have a minimum of five years' experience in the rubber industry.

The appointment will call for interesting and varied development work involving calendering and spreading of natural and synthetic rubber compositions.

Membership of a superannuation fund and a non-contributory Life Assurance scheme and a five-day week are among the general conditions of employment.

Applications in the first instance, in the strictest confidence, should be sent to the Personnel Manager, Box 936. (936)

SERVICE engineer and demonstrator for injection moulding machines. Applicants should have experience of hydraulic equipment and also moulding technique. Appointment, which will be permanent and pensionable, is in London but will involve extensive travel. State age, education, training, experience and salary required.—Box 913. (913)

This column can be YOUR best BUYER or SELLER

RUBBER & PLASTICS

MACHINERY

Why not see for YOURSELF

MACHINERY FOR SALE

6d. a word, Minimum 12/6 Box 2/-

COVENTRY Climax Forklift Trucks! A choice selection of petrol and diesel models. From 1,500lbs. to 4,000lbs. capacity. 9ft. to 14ft. lifts.—Full details and prices from Speed Electrics, Dept. R.J., Church Street, Basford, Nottingham. Tel. 75716. (937)

MANUFACTURERS of roughing machines for rubber sheeting, sponge rubber, splitting machines, leather cloth plant, embossing plates and rollers, spreading machines and presses.—G. L. Murphy Ltd., Imperial Works, Menston, Nr. Leeds. (238R)

NO. 11 Banbury. 8½in. extruder with 120/40 h.p. variable speed drive. 8in. Camelback extruder, 4½in. Camelback extruder. 48in. x 18in. calender with variable speed drive. 3,300 ton Baldwin and Southwark 20-daylight sheet press. Platens 12ft. 6in. x 4ft. 6in.—Reed Brothers (Engineering) Ltd., Replant Works, Woolwich Industrial Estate, London, S.E.18. Tel.: Woolwich 7611 (6 lines). (942)

PLASTIC injection moulding machine. Windsor 6oz. model SH6.—Fred Watkins (Engineering) Ltd., Coleford, Gloucestershire. Phone Coleford 2271/5. (863)

MACHINERY FOR SALE

(continued)

14 x 42 David Bridge mill, 40 h.p. 3-phase motor, Wallwork gearbox, brake, etc., installed at Hove for sale.—Particulars on request, telephone: Riverside 8341/2 or The Paraplas Co., 18 Wellington Road, Portslade, telephone: Hove 47537. (933)

MACHINERY WANTED

6d. a word, Minimum 12/6 Box 2/-

MELLOR Equipment Ltd., Springfield Lane, Salford, 3, buy used machinery of Francis Shaw and Joseph Robinson manufacture.—Telephone Manchester, Blackfriars 1866. (797)

TRADE SERVICES

6d. a word, Minimum 12/6. Box 2/-.

SCISSORS, up to 7in. ground and set by London cutlers established over 100 years; 48 hours postal service, 1/6 per pair.—J. A. Fowler, 18/22 Bell Street, Edgware Road, London, N.W.1. PAD 1491. (74R)

PVC *Sheeting scrap all types colour sorted and mixed regular quantities available*

MICHAEL S. STEVENS LIMITED
Station Works, 75c Upper Richmond Road, Putney, S.W.15
VANDYKE 6925 (739)

ARTICLES WANTED

6d. a word, Minimum 12/6 Box 2/-

THERMOPLASTIC scrap. We always buy large and small quantities and pay prompt cash.—Send offers to J. W. Nash and Co., Ltd., 27 Beethoven Street, London, W.10. Ladbroke 4655. (531)

WANTED, cotton liners and box poles for use with uncured rubber — State width available, number and price to Box 939. (939)

AGENCIES and REPRESENTATIVES

6d. a word, Minimum 12/6 Box 2/-

A WELL-KNOWN supplier of raw material to the rubber trade requires an additional sales representative to be based in the South of England. A technical background would be advantageous. Our own personnel are aware of this advertisement. — Replies in confidence to Box 926. (926)

REPRESENTATIVE required by Nottingham rubber merchants to cover Lincolnshire, Leicestershire, Derbyshire and South Yorkshire. Car provided.—Write in confidence with full details, stating age and previous experience to Managing Director, Box 944. (944)

CAPACITY AVAILABLE

6d. a word, Minimum 12/6 Box 2/-

SLITTING capacity. Plastic sheetings slit to narrow widths 3/16in. to ¾in.—Enquiries to Bias Bindings Co. Ltd., Gorgie Road, Edinburgh. (889)

ADVERTISERS

YOUR ANNOUNCEMENTS MAY BE DISPLAYED IN THE CLASSIFIED SECTION AT THE FOLLOWING RATES

PER INCH SINGLE COLUMN

1 INSERTION £3. 0. 0. *7 INSERTIONS* £2. 15. 6.
13 INSERTIONS OR MORE £2. 10. 0.
OR AS LINES AT 5s. 6d. PER LINE

ARTICLES FOR SALE

6d. a word, Minimum 12/6 Box 2/-

FOR disposal. Several tons of scrap arising from natural and synthetic rubber production. Also PVC scrap in coated canvas and compounded strip. — Offer to Works Manager, 243 Church Road, Mitcham, Surrey. (917)

FOR SALE

Regular quantities of sorted Resin and Micro Rubber waste for disposal, all colours in stock, always 200 tons in stock.

Apply Leather Components and Waste Ltd.,
21 Harborough Road,
Rushden, Northants.
Phone Rushden 3687, evenings Rushden 3329.
(906)

MISCELLANEOUS

6d. a word, Minimum 12/6 Box 2/-

USE chlorinated paraffin K71 for economical self-extinguishing of Polyester/glass laminates. Regular supplies available from Chemicals Trading Company Ltd., Cree House, 18-20 Creechurch Lane, London, E.C.3. Tel. AVEnue 5488. (486)

PLEASE NOTE *INSTRUCTIONS FOR THE CLASSIFIED ADVERTISEMENTS MUST REACH US BY 10 A.M. WEDNESDAY MORNING OF EACH WEEK*

Address Box Number replies to:
Box No. —, RUBBER AND PLASTICS WEEKLY
Maclaren House, 131 Great Suffolk Street, London, S.E.1

PLANTATION RUBBER

* * *

RUBBER LATEX

* * *

All grades

For samples and prices please write to :

HILTON, WALLACE & CO. LTD

St. Dunstan's House

IDOL LANE, LONDON, E.C.3

Telephone : MANsion House 1005

INDEX to ADVERTISERS

	Page
Abrasive Developments Ltd.	—
A.E.W. Ltd.	—
Allcock, J., & Sons Ltd.	—
Amalgamated Oxides (1939) Ltd.	—
Anchor Chemical Co. Ltd.	Cover i
Anderson, Joseph, & Sons Ltd.	—
Armour Hess Chemicals Ltd.	—
Ashley Associates Ltd.	—
Associated-Rediffusion Ltd.	—
Astor Boisselier & Lawrence Ltd.	—
Baker Perkins Ltd.	—
Barfoot, T. W., & Webb, W. F.	—
Barwell Engineering Ltd.	—
Belgrave Industries (Exports) Ltd.	—
B.I.P. Chemicals Ltd.	—
Birch, Singleton, W., & Sons Ltd.	—
Boston Marine & General Eng. Co. Ltd.	—
Bridge, David, & Co. Ltd.	505
Bright, John, & Bros. Ltd.	Cover ii
British Electrical Development Association	—
British Geon Ltd.	—
British Nylon Spinners Ltd.	—
British Recovered Rubber Co. Ltd.	i
British Resin Products Ltd.	—
British Titan Products Co. Ltd.	—
Bush Beach & Segner Bayley Ltd.	—
Cabot Carbon Ltd.	497
Carter Bros. (Rochdale) Ltd.	—
Carlton Press Knives Ltd.	—
Chance & Hunt	—
C.I.C. Engineering Ltd.	—
Cleggswood Oil Distillery Ltd.	—
Cohen, George, Sons & Co. Ltd.	—
Columbian International (Gt. Britain) Ltd.	509
Consolidated Zinc Corporation (Sales) Ltd.	—
Corrosion Exhibition	—
Crosfield, Joseph, & Sons Ltd.	—
Croxton & Garry Ltd.	526
Derrick Davis Plastics Ltd.	—
Dietzel, Hugo	—
Dixon, T. H., & Co. Ltd.	—
Docker, John, & Co. (Engs.) Ltd.	491
Dunlop Rubber Co. Ltd.	—
Du Pont Co. (United Kingdom) Ltd.	498
Durham Raw Materials Ltd.	—
Economist Intelligence Unit Ltd., The	—
Ellison, George, Ltd.	—
English Clays Lovering Pochin & Co. Ltd.	—
English Electric Co. Ltd., The	—
Esso	—
eur-O-matic	vi
Fawcett Preston & Co. Ltd.	—
Ferguson, A. O., & Co. Ltd.	—
Ferguson, James, & Sons Ltd.	—
Ferguson Shiers Ltd.	—
Firestone Tyre & Rubber Co. Ltd.	—
Foamair Ltd.	—
Geigy Company Ltd., The	—
Goodyear Tyre & Rubber Co. Ltd.	—
Greeff, R. W., & Co. Ltd.	—
Gresham & Craven Ltd.	—
Gummi und Asbest	—
H. F. Industrial Services Ltd.	—
H. K. Import & Export Ltd.	—
Halsteads Engineers (Leyland) Ltd.	—
Hankin, Geo., & Co. Ltd.	vi
Hardman & Holden Ltd.	—
Hatcham Rubber Co. Ltd.	iv
Hay & Robertson Ltd.	—
Hilton, Wallace, & Co. Ltd.	525
Hubron Rubber Chemicals Ltd.	Cover iii
Hughes & Hughes Ltd.	—
Hunt Heat Exchangers Ltd.	—
Iddon Bros. Ltd.	—
Iliffe Industrial Publications Ltd.	—
Imperial Chemical Industries Ltd. (Billingham)	—
Imperial Chemical Industries Ltd. (Dyestuffs)	500, 501
Imperial Chemical Industries Ltd. (Plastics—Butakon)	513
Imperial Chemical Industries Ltd. (Terylene)	—
Institution of the Rubber Industry	—
International Corporation Ltd.	—
International Synthetic Rubber Co. Ltd.	492
Ioco Ltd.	vii
K. W. Chemicals	—
Kautschuk und Gummi	—
Kendell, T., & Sons Ltd.	vii
Ketjen Carbon	—
Lankro Chemicals Ltd.	—
Laporte Titanium Ltd.	—
Latex Engineering Co.	516
Lavino (London) Ltd.	v
Leaver, Donald Ltd.	—
Leeds & Bradford Boiler Co. Ltd., The	—
Lindsay & Williams Ltd.	—
Lonabarc Ltd.	—
Londex Ltd.	—
London & Scandinavian	—
Lord, R., & Sons Ltd.	vii
McKechnie Bros. Ltd.	—
Maclaine, Watson & Co. Ltd.	—
Mersey White Lead Co. Ltd., The	—
Metal Box Co.	—
Micafine Ltd.	ii
Monsanto Chemicals Ltd.	—
Muehlstein, H., & Co. (London) Ltd.	—
Muller, Max	—
National Rubber Bureau	—
Nederlandsch Verkoopkantoor Voor Chemische Producten N.V.	—
New Conveyor Co. Ltd.	—
Noble Lowndes Pension Service, The	—
Northwestern Rubber Co. Ltd.	—
Novadel Ltd.	—
Oswald & Duncan Ltd.	—
Philblack Ltd.	—
Phoenix Rubber Co. Ltd.	—
PLA—MA Ltd.	—
Planters Engineering Co. Ltd.	—
Polymer (United Kingdom) Ltd.	—
Preston Tyre Fabric Manufacturing Co. Ltd.	—
Price's (Bromborough) Ltd.	—
Pullen, James H., (1942) Ltd.	iv
Rubber Estate Agency Ltd.	—
Reed Bros. (Eng.) Ltd.	—
Revue Generale du Caoutchouc	—
Rhein-Chemie GmbH.	—
Robinson Bros. Ltd.	viii
Robinson, Joseph, & Co. Ltd.	—
Rotunda Ltd	—
Rubber Age (New York) Ltd.	—
Rubber Latex Ltd.	518
Rubber Regenerating Co. Ltd. The,	Cover iv
Scott Bader & Co. Ltd.	—
Shaw, Francis, & Co. Ltd.	iii
Shell International Chemical Co. Ltd.	—
Shell Mex & B.P. Ltd.	—
Smith, Alfred, Ltd.	—
Smith, Wilfrid, Ltd.	—
Squire, Frederick, Ltd.	—
Stechler, L., & Co. Ltd.	vi
Steel, J. M., & Co. Ltd.	—
Steele & Cowlishaw Ltd.	—
Stocker, W. B., & Co. Ltd.	iv
Storeys of Lancaster	—
Stott, James, Ltd.	—
Sutcliffe Engineering Components Ltd.	—
Sutcliffe Speakman & Co. Ltd.	—
Tanner Bros. (Greenfield) Ltd.	—
Tilghman's Ltd.	—
Union Carbide Ltd.	—
United Norit Sales Corporation Ltd.	—
United Wire Works Ltd., The	—
Universal Oil Co. Ltd.	—
Universal Oil Products Co.	—
Vacu-Blast Ltd.	—
Verson Engineering Co. Ltd.	vi
Wallace, H. W., & Co. Ltd.	—
Wallis Engineering Co.	—
Washington Chemicals	—
Welwyn Tool Co. Ltd.	—
Witco Chemical Co. Ltd.	516
Zama Ltd.	—

MICROMYA

OMYA BSH

The finest natural whiting in the world

Has the patented coating

From the French Quarries and Factories of the OMYA Organization
HEAD OFFICE: PLUESS-STAUFER, A.G., OFTRINGEN, SWITZERLAND

Samples and Literature from:

CROXTON and GARRY LTD.,
16-18 High Street, Kingston-on-Thames, Surrey
KINgston 9444 (4 lines)

Proved

A NEW FACTICE
SPECIALLY MADE FOR USE
WITH NEOPRENE

Samples and Technical Data from the SOLE MANUFACTURERS

HUBRON RUBBER CHEMICALS LIMITED

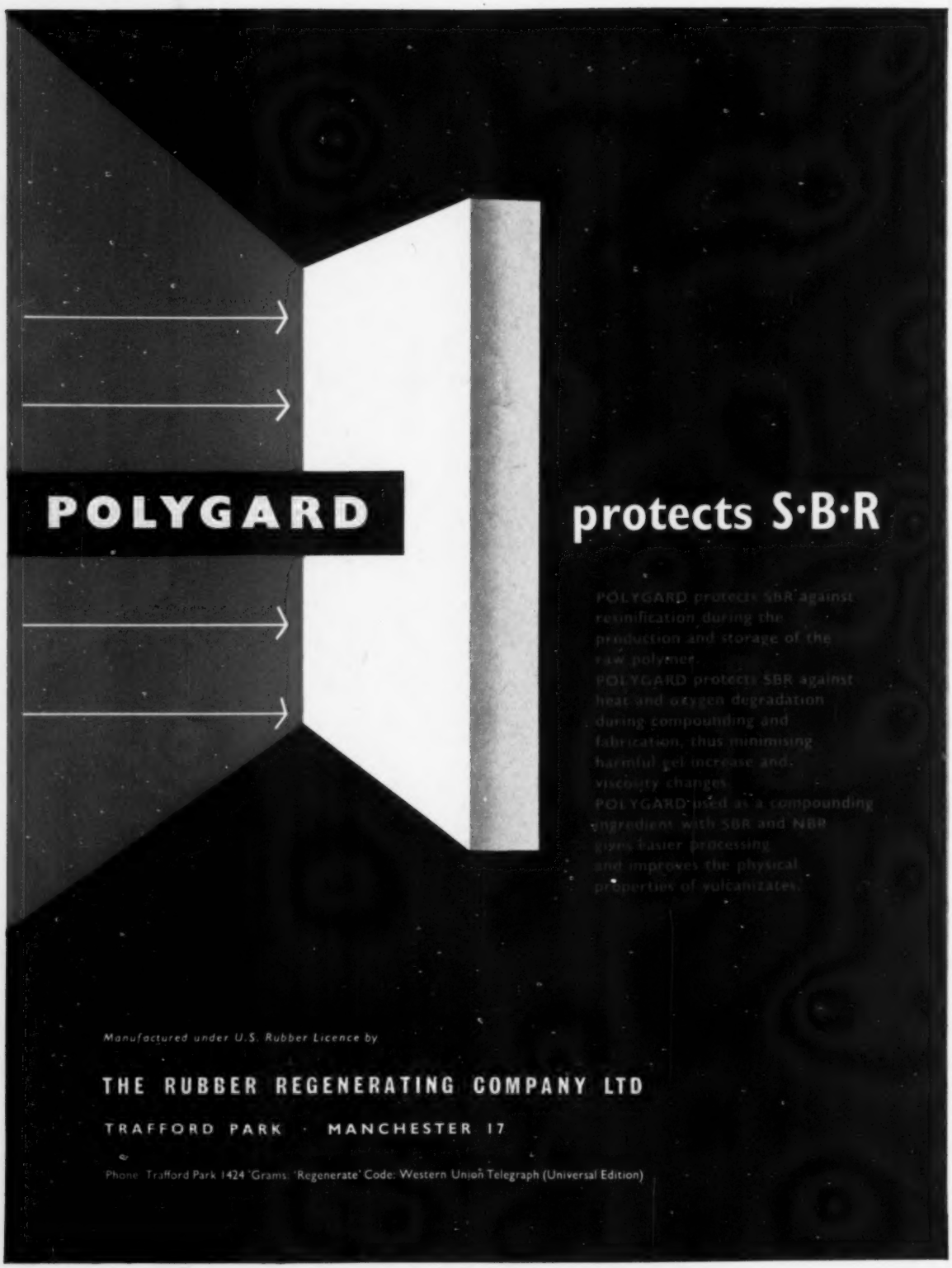
FAILSWORTH · MANCHESTER

LONDON OFFICE:
16 PHILPOT LANE
LONDON, E.C.3

Tel: Mansion House 2064
Grams: Accollyst, Bilgate, London

Tel. FAILSWORTH 2691 (5 lines)

Grams: Hubronrub, Manchester


POLYGARD
protects S·B·R
POLYGARD protects SBR against reunification during the production and storage of the raw polymer.
POLYGARD protects SBR against heat and oxygen degradation during compounding and fabrication, thus minimising harmful gel increase and viscosity changes.
POLYGARD used as a compounding ingredient with SBR and NBR gives easier processing and improves the physical properties of vulcanizates.
Manufactured under U.S. Rubber Licence by
THE RUBBER REGENERATING COMPANY LTD
TRAFFORD PARK · MANCHESTER 17
Phone: Trafford Park 1424 'Grams: 'Regenerate' Code: Western Union Telegraph (Universal Edition)

Printed in Great Britain by F. J. PARSONS, Ltd., London and Hastings, and published by the Proprietors, MACLAREN & SONS, LTD., Maclaren House, 131 Great Suffolk Street, London, S.E.1